Report for the year 1973

Commissioner of Public Health

Western Australia

REPORT of the

Commissioner of Public Health

for the year 1973

Presented to both Houses of Parliament

(1)—43996

The Honourable Norman Eric Baxter, M.L.C.,

MINISTER FOR HEALTH

☆

Sir,

I have the honour to submit the Report of the Department of Public Health for the Year 1973

WILLIAM SHARP DAVIDSON, M.B., Ch.B., D.P.H.

Commissioner of Public Health.

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ANNUAL REPORT, 1973

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Hon. Minister for Health

Sir, I have the honour to submit the report of the Department of Public Health for the year 1973.

The year 1973 was characterised by the loss by retirement of a number of senior officers.

Following on the retirement of Dr. A. R. Edmonds, the Director of Child Health, at the end of 1972, Dr. H. H. Macey, Senior Engineer Clean Air; Mr. E. J. Turnbull, Senior Dental Officer; Dr. D. D. Letham, Director, Occupational Health, retired in 1973 and were followed by the retirement on medical grounds of Dr. D. J. R. Snow, Deputy Commissioner of Health and Deputy Principal Medical Officer towards the end of the year. Because of the prolonged illness of Dr. Snow, Dr. Letham had been acting Deputy Commissioner for some time.

The loss of all this knowledge and experience at one time has been sorely felt in the Department but the quality and ability of the younger men in the Department leaves me no worries as to its future efficiency.

The retiring officers carry with them, one and all, the best wishes of all their colleagues in the Department.

LEGISLATION AMENDMENTS, 1973

Health Act Amendment Act, 1973

Assented to 28th December, 1973.

In brief the amendments were :—

1. *Reference to Midwives*
   Midwives are now registered under the Nurses Act.
2. *Illegal Disposal of Liquid Wastes on Vacant Land*
   The word " sewage " was substituted for the word " urine " where applicable to provide the necessary control.
3. *School Dental Services*
   Provided for—
   (a) The establishment of schools to train persons as school dental therapists.
   (b) Employment of school dental therapists for the treatment of schoolchildren and pre-school children.
4. *Power for a Local Authority to Charge for the Removal of Rubbish*
   Sections 106 and 112A amended to clarify power of Local Authority to raise charges.
5. *Prohibition of the Sale of Dangerous Toys*
6. *Foods given as a prize or Given Away*
   Standards of wholesomeness for food offered for sale must be maintained.

7. *Control of Leprosarium Patients and Visitors*
   Extends the power to deal with the problem, especially where non patients from outside the institution are involved.
8. *Payment of Medical Practitioners for the Notification of Venereal Disease*
9. *Medical Examination of Aboriginals*
   Section repealed to remove discrimination between aboriginal and non-aboriginal people.

HEALTH ACT REGULATIONS AND BY-LAWS

Health (*Venereal Diseases*) *Regulations* 1973

Former Venereal Disease Regulations were revoked and new regulations published in *Government Gazette* of the 2nd March, 1973.

Food Hygiene Regulations 1973

All former Food Hygiene Regulations were revoked and new regulations published in the *Government Gazette* on the 10th April, 1973.

Food and Drug Regulations

Amended *Government Gazette* 27th April, 1973, in regard to :—

(a) Foods not elsewhere standardised.
(b) Food Additives.
(c) Fish Balls, Rissoles, Cakes, etc., stipulating a fish content of 51%.

Poultry Processing Establishments Regulations

New Regulations were published in the *Government Gazette* 25th May, 1973.

Meat Inspection and Branding Regulations

Amended to include new local authority districts as meat branding areas.

Sewerage (*Lighting, Ventilation and Construction*), *Regulations* 1971

Amended *Government Gazette* 16th November, 1973—

Amendment in regard to ventilation of bathrooms and toilets.

Model By Laws Series "A"

Measurements converted to metric. *Government Gazette* 21st December, 1973.

Chiropractors Act

Amendment to Rules *Government Gazette* 16th November, 1973.

(a) Increased registration fees.
(b) Set the education standard for a person applying for registration at matriculation level.

Clean Air Act

Amended *Government Gazette* 3rd August, 1973—to extend control of emission of dark smoke from a chimney of scheduled premises.

Order in Council *Government Gazette* 14th September, 1973. Adding Asphalt Works to list of scheduled premises.

Dental Act

Dental Charges Committee Regulations 1973. New Regulations *Government Gazette* 7th December, 1973.

Medical Act—Proclamations

Proclaiming the Shires of Mt. Magnet, Cue, Sandstone and Yalgoo as a region in respect of medical or surgical services within the meaning of Section 12 of the Medical Act. *Government Gazette* 22nd June, 1973.

Proclamation declaring the Community Health Services Branch of the Public Health Department to be an auxiliary service for the purpose of the Medical Act. *Government Gazette* 20th July, 1973.

Proclaiming the St. John of God Hospital Kalgoorlie and the Kalgoorlie Regional Hospital to be regions within the meaning of Section 12 of the Medical Act. *Government Gazette* 7th December, 1973.

Noise Abatement Act

Proclaimed *Government Gazette* 5th October, 1973.

Occupational Therapists Act

Amended (*Government Gazette* 3rd August, 1973). Increasing Registration Fees.

Poisons Act

Order in Council—*Government Gazette* 11th May, 1973. Provided for control of " Hexachloraphene ".

Order in Council *Government Gazette* 30th November, 1973. Declaring Methaqualone and Pentazocine to be specified drugs in accordance with Section 5 of the Act.

STATE HEALTH LABORATORIES

Dr. Laurie has provided his usual excellently detailed report on the activities of the Laboratory Services.

The work of these Services continues to grow in volume and complexity despite takeover actions by University Departments in the provision of Laboratory Services for the Sir Charles Gairdner Hospital. The duplication of services instigated by the Hospital Board has caused redundancies in manpower and costs which will eventually be stabilised by the continuous increase in the overall work carried out by the Laboratories.

In the meantime, as indicated by Dr. Laurie, there has been considerable anxiety and unrest.

It is becoming clear that a major role of the Public Health Laboratories is in the various fields of survey of people, the environment they live in, the food they eat, and the various influences that produce disease or ill health.

This is an ever expanding role and one of utmost importance because on its efficiency will depend the effectiveness of the Department of Public Health in the field of preventive medicine and its role as guardian of the health of the population.

With such thoughts in mind there should be no grounds for concern about the future of the Public Health Laboratories and their status in the community.

In carrying out its responsibilities for the care of the health of the community the Health Department makes extensive use of the Government Chemical Laboratories and the services of the Government Analyst and his staff.

In a determination of the presence or degree of pollution of the environment many different systems and articles have to be tested in many different ways and there is a growing tendency for every different facet of pollution control to produce its own particular laboratory. This is not only expensive duplication but is also inefficient. The original concept of the use of the land at the Sir Charles Gairdner Hospital area was the development of a Public Health Institute which would contain all these different laboratory skills and so would act both as a diagnostic laboratory and an institute for the protection of the food we eat, the water we drink, the air we breathe and all other relevant things in the environment in which we live. As a first step in this direction serious consideration should be given to an amalgamation in whole or in part of the State Health Laboratories and the Government Chemical Laboratories.

TUBERCULOSIS CONTROL

Dr. Edwards reports that the first year of the 5 year period of suspension of compulsory x-rays surveys passed without any pronounced change in the overall tuberculosis picture. One hundred and forty-three active cases were reported, as against 172 in 1972, the last year under the compulsory system. The main sources of cases were chest clinics, chiefly through follow-up of persons at risk, and hospitals and general practitioners. Cases were sought in special surveys amongst men of 45 years of age and over, who have shown a higher rate than other groups.

Persons born outside Australia again showed relatively high rates and were responsible for exactly half of the cases. The rate amongst males was $2\frac{1}{2}$ times that in Australian born males and in females the rate was slightly more than twice as great.

EPIDEMIOLOGY

There was a large increase in the notification of salmonellosis during 1973. This was due to an explosive outbreak at the beginning of the year originating from a smallgoods factory and involving 400 cases of which 60 were admitted to hospital. The source of the outbreak was quickly traced and the factory closed. All infected goods were destroyed and carriers isolated from the staff. With carriers eliminated and the premises sanitised the factory was re-opened after two weeks.

This is the second major outbreak of food poisoning arising from contamination of prepared foods in a smallgoods factory in the past year or two and has occurred despite increased vigilance on the part of the inspectorial staff. The design of these factories and the work plan adopted are under scrutiny. Increased sampling of the food products has been instituted and new Food Hygiene Regulations were gazetted in April 1973.

Five cases of Diphtheria were notified; one of these was a healthy carrier so that only four cases should have been recorded. This outbreak is described in detail in Dr. Holman's report as it occurred among Aborigines in the North West. The outbreak was investigated and energetically controlled.

Immunisations maintain the usual numbers, except an expected fall off in Sabin vaccination which is now becoming closely related to the number of new births as the adult population has been largely immunised. There is a disappointing lack of enthusiasm in country Local Authorities to run immunisation clinics with the nett result that many children miss out on their booster dose when going to school. Metropolitan Local Authorities provide a good service in this field.

Provision of immunisation clinics has always been regarded as a Local Authority responsibility and the local Medical Officer of Health, must concern himself with the standard of immunity within his area.

VENEREAL DISEASE

Control of venereal disease continues to be one of the most serious problems facing the Department. Numbers of notifications and attendances at clinics continue to increase. The figures are swollen by the fact that there is increased activity in the field by the Venereal Disease Control Branch, assisted by doctors and nurses in the Community Health Services.

Syphilis figures for aborigines are probably exaggerated because of the impossibility in many cases of distinguishing between venereal treponematosis and the endemic treponematosis which has been prevalent among aborigines from time immemorial. There is no doubt, however, that syphilis is spreading rapidly thrcugh the aboriginal population in various areas—assisted by the lack of traditional restraints that their previous native culture had placed upon them and by a decreasing amount of inherent immunity from a diminishing incidence of Yaws. Alcoholism and venereal disease are now in all probability the most serious threats to the future welfare of the aboriginal race and neither of these can be controlled by purely medical means or activities.

Indeed they will not be controlled unless the aborigines themselves get some insight into the situation they are in and develop the desire and willpower to get themselves out of it. The Community Health Services not only look after the health of the aboriginal people but spend a considerable effort and time on endeavouring to stimulate this desire and willpower.

COMMUNITY HEALTH SERVICES

Dr. Holman's report on the activities of the Community Health Services has to be read in detail to obtain an appreciation of the work and energy that is being put into the improvement of aboriginal health and education and the efforts being made to overcome the tremendous difficulties in the way.

CHILD HEALTH SERVICES

These are an amalgamation of the Infant Health and School Health Services to ensure continuity of care of infant and school child. This service is broadening its scope in two directions. Instead of the traditional examination of the child and reporting defects it is now entering into closer contact and discussion with other groups involved in child care and education so that the Service plays an important part in child health assessment so as to obtain the best results for the child's future welfare and education.

The other development in the Service that has proved a success is the attachment of a nurse to a particular school so that she is always available for consultation with children, teachers, and parents. It is hoped to expand this activity in 1974.

THE DENTAL HEALTH SERVICES

The Dental Health Service continues to provide a school dental service and a dental service for the public in areas where there are no dentists in private practice. The subsidised scheme for school children and pensioners continues to function. The Department, however, is now involved in the development of a School Dental Service which is dependent on considerable financial assistance from the Commonwealth Government. This type of Service will exist throughout Australia and involves the training and employment in the School Dental Service of Dental Therapists working in conjunction with dentists. This service will provide free dental care for all school children up to the age of 15.

Dental Health Education is given to school teachers and nurses and is being developed in schools for the children.

A higher rate of caries is found in schools where lollies etc., are available than in schools where they are not available. This is resulting in more schools going over to dentally acceptable menus instead of cariogenic snacks.

OCCUPATIONAL HEALTH

In addition to its responsibilities in the protection of workers in various industries this Division of the Health Department has responsibilities in the Environmental field and is responsible to the Commissioner for the day to day administration of the Clean Air Act, Radioactive Substances Act, Registration of Pesticide Operators and recently the administration of the new Noise Abatement Act.

New cases of silicosis from the goldmining industry continue to occur but the total number of cases declines, probably due to a decline in the industry. As expected, new cases of asbestosis from blue asbestos continue to be diagnosed in miners previously employed at Wittenoom.

The Noise Abatement Act has stimulated interest in the preservation of hearing in industry and a number of industries have already been active in reducing noise levels. The Act has stimulated Local Authority activity in the control of community noise and a number of Local Authority officers have been trained in the measurement of noise levels.

The Clean Air Group has been very active and in addition to its own particular problems has been giving considerable assistance to the Environmental Protection Authority in the provision of data on the prevalence of atmospheric pollutants. A number of graphs and tables occupy the Director's report and a comparison with other cities and countries is given to indicate the relativity of atmospheric pollution in W.A. It would appear from the parameters used that there is no cause for alarm in W.A.

The State X-ray Laboratory continues its supervision of radiation producing equipment and monitoring dosage to persons employed or in the vicinity of radiation producers. The Laboratory also continuously monitors the atmosphere and the fallout in rainwater. Short term increases are noted after nuclear tests in the Pacific Ocean.

It is again stressed that the Radioactive Substances Act requires re-enacting to include control of radiations not included in the present Act, such as laser beams and escaping radiation from microwave ovens. Suitable amendments to the Act have been drafted.

GENERAL SANITATION AND HYGIENE

The Health Surveyors Branch carried out its normal duties as described by the Chief Health Surveyor. The Commissioner of Public Health is responsible for the safety and hygiene in Public Buildings. The definition of a " Public Building " however is a trifle obscure, for example a restaurant or hotel is not normally a " Public Building ", but if a dance floor is added, however small, the restaurant or hotel is then

a Public Building. Plans were submitted for such a restaurant at the top of a high-rise building. The plans were not accepted because the width of the escape stairways or exits did not comply with Public Building Regulations. However, instead of correcting the width of the stairways the architect merely removed the small dance floor from the plans and so removed the construction of the whole building from the Commissioner's jurisdiction. The removal of the dance floor did not reduce the fire risk or the number of people occupying the building. This sort of attitude emphasises the need for proper control of safety in high-rise buildings by a central authority properly equipped for such a function.

In the meantime the Department continues to carry out its responsibilities in scrutiny of plans for new public buildings or alterations to existing ones. Problems arise because of unauthorised alterations to buildings or change of use of a building so that a considerable amount of time is spent by the inspection staff in supervising buildings used or suspected of being used as public buildings. The Chief Health Surveyor quotes a case in point where a part of a building was found to have been converted into a night club. It had no emergency exits. The proprietor was instructed to provide a rear escape staircase. Soon after it was installed there was a fire in the club involving the front staircase but 60 people in the club, who would otherwise have been in extreme danger, escaped by the rear escape stairway.

Community Waste Disposal has been given considerable attention, particularly since the Metropolitan Water Board has put restrictions on large areas in and around the Metropolis because of the conservation of subsoil water for reticulation purposes. The Metropolitan Refuse Disposal Planning Committee has completed its investigation of Waste Disposal and its Report is being printed.

Extensive sampling of food, locally produced and imported, continues to ensure its wholesomeness and freedom from bacterial or chemical contamination. The results are shown in Mr. Edinger's report.

In maintaining the standard of Food and Drugs the Department has met with a serious legal difficulty in that " A Manual for Justices " issued by the " Royal Association of Justices of Western Australia Incorporated " indicates that Section 208 of the Health Act and similar sections which deal with standards of food and drugs can be rendered null and void by the application of Section 24 of the Criminal Code. The Department has had to drop charges of sub-standard goods against persons who have used this Section 24 as a defence. It would appear that Section 232 of the Health Act should exclude the application of Section 24 of the Criminal Code to Food and Drug sampling, but if this cannot be agreed to at the level of " A Manual for Justices " then the Health Act must be amended to specifically exclude the application of Section 24, otherwise control of the standard of Food and Drugs will cease.

STATISTICS BRANCH

Dr. Marlene Lugg has given some indication of the esteem the standard of Hospital Morbidity Statistics in W.A. is held in Australia and elsewhere. The few tabulations presented are merely to indicate the extent of the information stored. As indicated by Dr. Lugg this store of data is made use of by researchers and administrators in various fields.

The pattern of hospital morbidity statistics remains remarkably similar from year to year.

Possibly the most interesting variation is the decline in the length of stay. This will now probably flatten out as hospitals reach a limit to which increased efficiency can reduce the time the patient stays in hospital.

W. S. DAVIDSON,
Commissioner of Public Health.

Appendix I

VITAL STATISTICS FOR WESTERN AUSTRALIA (*a*)

	1969	1970	1971	1972	1973
Mean Population—					
Males	489 531	509 875	529 371	541 158	548 876
Females	466 129	484 326	502 243	515 350	523 804
Births—					
Males	10 595	11 172	12 493	11 337	10 557
Females	10 159	10 446	11 741	10 840	9 953
Total	20 754	21 618	24 239	22 177	20 510
Birth rate per 1 000 of Mean Population	21·72	21·74	23·50	20·99	19·12
Deaths—					
Males	4 313	4 392	4 536	4 317	4 586
Females	3 037	3 151	3 270	3 124	3 259
Total	7 350	7 543	7 806	7 441	7 845
Death rate per 1 000 of Mean Population	7·69	7·59	7·57	7·04	7·31
Natural increase rate per 1 000 of Mean Population	14·03	14·16	15·93	13·95	11·81
Infant Mortality per 1 000 Live Births—					
Perth Statistical Division	18·3	18·1	17·0	13·1	16·0
Rest of State	27·8	27·0	23·2	20·6	25·1
Whole of State	21·8	21·2	19·1	15·7	19·2
Stillbirths (*b*)—					
Perth Statistical Division	165	184	194	173	173
Whole State	250	295	298	258	270
Stillbirth rate per 1 000 total births	11·90	13·46	12·15	11·50	12·99

(*a*) Includes events among the total population, including Aborigines.
(*b*) The term " stillbirth " for registration purposes refers to a child of at least 20 weeks gestation, not born alive.

Appendix II

State Health Laboratory Services

Wm. Laurie, D.S.O., M.D., T.D.D., F.R.C.P.A.
Director.

I. ADMINISTRATION

General

Development of the State Health Laboratory Service, in response to sustained demand, continued in 1973, as Western Australia's development continued. The overall increase of work (11·3 per cent.) and the increase in work of the country branch laboratories (15·9 per cent.) is shown in detail in the tables, see appendix.

Central Laboratories' administration and all supervisory and ancillary services here, felt the impact of this increased demand, especially since increased annual leave for all civil servants caused serious problems with regard to availability and placement of relieving staff.

In response to requests extending over several years, an Organisation and Methods Officer was attached to this Laboratory Service. Before he had become fully involved in the duties of his appointment, he was promoted to Assistant Administrative Officer (Laboratories) a newly created post. This strengthened that side of the Central Laboratories' organisation, although the Organisation and Methods problems remain unsolved, and advantages were offset by promotion and transfer of the already inadequate but very experienced other clerical staff of the laboratories. The overall result has been to some extent crippling, with our problems of distance and communication in a widely distributed department, accentuated by problems of ordinary office staffing and procedure. The combined result is a situation that would present a challenge to any Organisation and Method team.

Expansion of Services

Apart from the increases in work as reflected in the tables, this Service has been extended to the Pilbara by a small laboratory created in the Roebourne District Hospital with a Senior Technologist and Laboratory Attendant as staff. It was expected that this extension would have been in Dampier, where the need has been stressed for several years. Since no laboratory accommodation could be found there, temporary facilities have been adapted at Roebourne, serving also the Wickham population.

A new prefabricated laboratory, of ample size, has been commissioned at the Port Hedland Hospital, replacing the hopelessly congested small room in the Outpatients area.

A small laboratory, staffed by a Senior Technologist, opened in the Department's Venereal Diseases Clinic in Moore Street.

Five members of the staff of our Microbiology Division (one Senior Technologist, two technologists and two other ranks) were loaned to the University Department of Microbiology, together with the part-time services of our Microbiologist (Medical) to enable the Medical School to undertake the routine diagnostic bacteriology for the Sir Charles Gairdner Hospital. Haematology (but not blood banking) and routine Histapathology from the Sir Charles Gairdner Hospital were also transferred to University Departments.

A succession of population surveys have been requested by various authorities and groups. These have involved most sections of the State Health Laboratory Service (Biochemistry, Cytology, Haematology, Microbiology and Serology). They also require planning and co-ordination and co-operation with the Department of Community Health and others. It is obvious that a sub-section of the Laboratories' Central Administration is emerging, to manage surveys, probably in conjunction with the section responsible for supervision and placement of relieving personnel.

Accommodation

Due to lack of funds the building programme has been seriously curtailed with the result that only about 50 per cent. of the original building programme has been authorised. This work will be completed early in 1974 which will enable almost all staff in scattered laboratories in the city to be brought together in one area. This will represent a considerable improvement of present working conditions but is much less than is really necessary for comfortable working and further expansion.

Tours and Conferences

In 1973 twenty-one technologists attended a variety of technical courses and conferences throughout Australia. The large majority of the courses were in Perth. The value of such courses cannot be over-stressed and it is intended to encourage as many technical staff as can be spared to attend future courses of this nature.

Two senior medical staff spent some time overseas during 1973, mainly attending conferences.

One medical officer and one principal technologist attended a Forensic Conference in Sydney. The Principal Technologist also attended a Microscopy course in Canberra and a course of Serology in crime work.

Visitors

During the year the Laboratories were visited by the following :—
Professor Hutchison, Parasitology Division of University of Strathclyde, Scotland.
Professor O'Grady, Professor of Microbiology, St. Bartholomew's Hospital, London.
Doctor De Witt and Doctor Gill, of the Institute of Medical Research, Kuala Lumpur.

II. STAFF

In 1973 the total work load increased as compared with 1972: in the central laboratories the increase was 10 per cent. compared with 1972. This is a lower rate of increase than has been the case in previous years : slowing-up is due to the taking over of some teaching-hospital laboratory work by the University. The work in the country laboratories increased by nearly 16 per cent. compared with 1972, a small slowing of the rate of increase compared with previous years. Staff increases did not keep up with increased demands with the result that much overtime was worked : the situation was helped to some degree by the purchase of modern equipment and some automated equipment. In 1973 the expenditure on major items of laboratory instruments was almost $200 000 : this did not include the cost of a computer.

1. **Changes** (including Branch Laboratories)

Position	Recruited	Resigned
Pathologists	2	....
Medical Registrars	1	....
Senior Technologists	....	2
Technologists	24	11
Cadet Technologists	....	....
Laboratory Assistants	7	13
Laboratory Attendants	47	33
Nurses	5	4
Clerks	13	10
Typists	4	5
Storemen	2	2
Watchmen	5	1

2. Sickness

The over-all sickness rate in 1973 was only fractionally less than in 1972, namely a reduction of 0·33 per cent. i.e., a sickness rate of 1·71 per cent. or 86 838 working days which means that in 1973 the total working time lost amounted to almost 60 years. It is worth noting that there was a disproportionate amount of sickness among the less skilled members of the laboratory staff which suggests that, as is seen in industry, lack of job satisfaction may play a part in this.

SICKNESS ANALYSIS

	% of work force	% of working days lost
Medical Staff	4	2·68
Senior Technologists	12	1·94
Technologists	16	11·88
Nurses	3	2·48
Clerical Staff	16	13·42
Laboratory Assistants	8	20·13
Laboratory Attendants	35	47·13
Cadet Technologists	6	·34

3. Office Staff

Clerical and office staff play a most important part in laboratory work but are difficult to recruit and difficult to train for the special work in a laboratory office. Consequently there is always a bottle-neck here so much so that where no ambiguity can result hand written reports are sent out by some sections of the laboratories.

4. Medical Staff

In 1973 it has been possible to recruit one Forensic Pathologist. In addition one consultant clinical haematologist was recruited to act part-time for the State Health Laboratories. This part-time system has proved highly satisfactory with the Histopathology service

5. Technologists

Recruitment of staff for remote country areas with a harsh climate continues to be difficult even with substantial inducements of promotion, extra leave, etc. Poor housing is probably one most important factor militating against recruitment for the country areas.

6. Technology Training

The cadetship system of training in the West Australian Institute of Technology has been abandoned with the taking over of tertiary education by the Australian Government. A most important development is that the medical laboratory technology course at W.A.I.T. now becomes a degree course leading to a Bachelor of Applied Science (Medical Technology).

III. WORK DONE IN 1973

1. General

The work done in the central laboratories and the country laboratories is tabulated in the appendix. This is now reported only as numbers of tests. The introduction of automation has so greatly changed unit values that these cannot be used. Table IA gives a summary of the work done in the Central Laboratories in 1973 : it is 10 per cent. more than in 1972, a much slower rate of increase than in the past. The reason for this has been given above. Table IB summarises the work done in the country laboratories in 1973. The increase over 1972 work is 15·9 per cent. There is marked variation in the rate of increase from laboratory to laboratory.

A new health service, the Community Health Service has been brought into being in Western Australia as a joint Australian Government-State Government project. The aim is to provide a complete health cover for the under-privileged in the State and especially the aboriginal. The functions of this new Service are such as to lead to a considerable increase in laboratory investigation in the field, especially *ad hoc* surveys, e.g., for helminthiasis.

2. Microbiology

Clinical Bacteriology

The work done in this section is shown in Table IIA of the appendix. Work is down 12 per cent. compared with 1972 due to the handing over of teaching hospital bacteriology to the University of Western Australia. Trials with various sensitivity-testing methods have shown that the Kirby Bauer method is not a practical proposition for routine and reliance still rests therefore on a revised disc method.

Cross Infection

A continuing routine bacteriology surveillance is carried out on operating theatres, intensive care unit, central sterile supply and wards of the Gairdner Hospital. This is also done in other hospitals on request. In 1973 this service proved of much value in detecting serious faults in disinfection and breakdowns in cross-infection control, e.g., one cup for all thermometers in one ward.

Phage Typing

This is carried out routinely for metropolitan and country areas. During the year a new phage, 94, was tried out against previously untypeable strains and gave positive reactions with approximately 10 per cent. of these isolates.

Public Health Bacteriology

Some Government authorities have referred microbiology problems associated with sewage and trade effluents. One of these occurred at a malt works treatment plant where contamination with *Actinomycetis sp* had been encountered during the treatment of two activated sludge plants.

Waters and Sewage Laboratory

In appendix Table IIB a tabulated summary is given of the work done in 1973. The laboratory continues to provide bacteriology requirements for control of water and sewage. A wide range of samples was examined including drinking water, rivers, sea water, and raw and treated effluent. Initial tests have also been carried out for a comparative trial of MPB and membrane filter methods for reticulation system samples.

Venereal Bacteriology

The routine work of the special disease clinic in Perth has increased as is being found elsewhere. The provision of a technologist to work in the clinic itself has proved of value. In collaboration with the Virus Laboratory a study is being made into the possibility of Chlamydia being actiological agents for non-specific urethritis.

ENTERIC DISEASES DIAGNOSTIC AND SURVEILLANCE UNIT

The work of this unit is wide-ranging involving both diagnostic enteric bacteriology and parasitology, but has extended to embrace the food hygiene diagnostic and monitoring work, as requested by the Department of Health and the Department of Primary Industry as well as occasionally by the Department of Agriculture.

The Enterobacteria Laboratory has produced much valuable work during 1973 including a summary of all serotypes isolated in the last 10 years. Publications during the year have led to much interest in new techniques evolved in this section. Details of work done in 1973 are in appendix Table IIC.

The scope of the section also covered work providing for epidemiological surveillance including phage-typing of *Salmonella typhimurium*.

The development work on methodology proceeded, particularly in respect of identification of V. parahaemolyticus, Yersinia and Edwardsiella as well as Cholera vibrios including both agglutinable and non-agglutinable strains. With Edwardsiella a provisional antigenic scheme has been worked out, and, together with detailed epidemiology of Edwardsiella in W.A., is nearing completion. 1973 is noteworthy for an extensive food poisoning outbreak involving 3 Salmonella serotypes, namely Sa typhimurium ; Phage type 22 ; S. livinstone and S. orion. Over 400 human cases were directly associated with the out-break which was traced to a meat smallgoods factory, where food handlers, meat products and plant processing equipment were heavily contaminated with all three serotypes. Over 60 patients were admitted to hospital with one death occurring in an 80 year old woman. The outbreak which started in January, reached a peak in early February and was under control, or restricted by late March, although symptomless excretors were followed for several weeks longer. The result of this outbreak was to extend surveillance programmes initiated by metropolitan and other health officers and this is likely to extend to other areas in the future.

Certain surveys on a collaborative basis with the Department of Fisheries and Fauna, W.A. Museum, University Department of Zoology, the Zoological Gardens Board and the Department of Agriculture, have been undertaken with some important findings, particularly those connected with the Quokka population on Rottnest Island.

Three publications have issued from the section in 1973. During the ANZAAS Congress held in Perth in 1973, the section was responsible for the Symposium entitled " Salmonella in the Environment " and a paper was read on " Salmonella in Humans. Effluents and Wildlife in Coastal Environments ".

The Symposium was well attended and well received, indicating that there remains considerable interest in the scientific fraternity on Salmonellae and epidemiology of Salmonellosis.

A number of outbreaks of Shigella infection occurred during the year noteworthy of which was one involving 30 cases in a Child Care Centre in the Metropolitan area.

Investigation of cases admitted to the Royal Perth Hospital with a possible diagnosis of Cholera were made in collaboration with the Head of the Department of Microbiology in the Royal Perth Hospital.

Parasitology continues to be an important diagnostic service of the section, but no specific surveys or outbreaks were reported in 1973, but it is necessary to note that the isolated cases of tropical rat mite infestations were still occurring.

In the food hygiene section although there was a drop in the number of routine export egg pulps submitted for bacteriological examination, these were more than made up by the additional smallgoods and sea food samples tested which reflected an increased awareness of various health authorities of the hazard of food production and handling. Testing of food treatment premises and handlers increased dramatically. It remains obvious that many local health authorities are as yet unaware of the need for thorough investigation of food poisoning outbreaks. All too often specimens are received several days after an incident has occurred and frequently only a single food sample has been received without other items that could be implicated in the outbreak. It is rare in the sporadic episodes to receive clinical material from the patients.

Media

Has provided for increased demands both in the central laboratories and in the country laboratories. Once the move into new premises has been completed, greater emphasis will be placed on standardisation of media both as regards quality and comparative efficiency.

Mycobacteria

There has been a significant falling-off of the work in the Department. Table IID appendix gives details of material received. During 1973 over 10 000 specimens were submitted. These include 373 strains referred for identification : a number of these were referred from the Department of Agriculture as part of the Department's drive against tuberculosis in cattle. From the material received 1 164 were found to be positive

The falling-off of work allowed a further development of serotyping methods. In the future it is hoped to apply this to all atypical mycobacteria recovered in the laboratory. 93 strains were examined as a collaborative stage in the international mycobacteria working group under the Chairmanship of Dr. Kleeburg in South Africa.

Mycology

Table IIE in the appendix gives details of work done. In 1973 there was an increase of almost 25 per cent. compared with the work of 1972.

The Dermatomycosis remained the most important mycosis in Western Australia. Candida infection increased to 1 600 cases during the year. Urine specimens sent in for bacteriology investigation were also tested for *Candida* species and 8·15 per cent. were found to be positive. Approximately 60 per cent. of the total urine specimens were from females of whom 11·5 per cent. were positive for Candida.

Of the more exotic fungal diseases in 1973 there was one case of Actinomycosis of the lung, one of Cryptococossis of the meninges and one case of Sporotrichosis.

Virology

The work of this section is summarised in Table IIF of the appendix. In common with all other sections of the laboratory the virology section suffered from insufficiency of staff. These especially affected Virology as so far there has been no automation which has proved of such value in other sections.

One important event in 1973 was the influenza epidemic. The responsible virus was Type A and the strain A_2/Eng/42/73. This has been incorporated in current Australian vaccine preparations.

Investigations continue into the possibility of coxsackie virus being an agent in the causation of heart disease. Until a cross section of the community is examined it is difficult to evaluate the significance of findings.

New techniques such as immunofluorence and counter electrophoresis promises to speed up the diagnosis of viral diseases. Other work includes population studies of Epstein Barr Herpesvirus antibody levels, investigations associated with transformation index of fibroblastic cell lines derived from cancerous and normal individuals under challenge from viruses, and virus studies in cot deaths. Unfortunately this last subject, like all other studies in this problem, has not yet yielded significant results.

Much time has been spent on the preparation of virus antigens and specific antibodies because of lack of satisfactory commercial preparations.

A high level of quality control is maintained in all the work being carried out and it is of interest to note that this must be one of the very few diagnostic laboratories which can claim that all cell lines are free of mycoplasmas. The methods ensuring this were developed in the laboratory and publication is awaited.

It is hoped that computerisation will facilitate publications once the move has been completed into the new laboratories.

Mycoplasmas

Perhaps the only mycoplasma of clinical importance is *M. pneumoniae* but some others may be pathogenic for man either by themselves or as opportunists. While this question remains unresolved it is important that facilities remain available for isolation of mycoplasmas from clinical material.

The use of tissue culture techniques is now under investigation. If this proves successful its use would overcome the problems associated with obtaining clinical samples early in the infection.

An interesting feature of the influenza epidemic was the concurrent *M. pneumoniae* infection in a number of patients.

3. Biochemistry

This year's work is summarised in Table III of the appendix. The usual increase occurred of 22 per cent. and the State Health Laboratories continued to perform the work of the Sir Charles Gairdner Hospital competently so far as we were informed.

The only equipment added was a new gas Chromatograph (Toxicology) and a new Varian Atomic Absorption apparatus as the old model had been in use 5 years and was obsolescent. Much of the automated equipment is in this stage—venerable with age—but lack of precise knowledge of the future roles of this department precludes seeking the large sums necessary for replacement. The S.M.A. 12/30 has been for a year the only apparatus of its kind left in Australia. It has certainly paid for itself in 5 years.

Quality Control

For the last 2 years this section and the country branches have joined in the Wellcome Quality Control programme of international scope. This year the laboratory came 39th out of 397 participating laboratories and was first in Western Australia, leading the other major biochemistry laboratories by a handsome margin. In particular, calcium estimations have shown us 2nd and 3rd out of 300 or more laboratories in 2 consecutive years. This has given the staff considersble satisfaction.

Toxicology

The work is summarised in Table IIIB of the appendix. There was a considerable increase in volume of work, for example, drug analyses nearly doubled during the year. Methodology was continuously overhauled and improved : a scientist joined the staff in May and brought considerable experience in organic chemistry techniques with him. The staff became registered analysts in the latter part of the year and a start was made on forensic analysis. Other than recruitment of the one chemist there were no major changes of staff or space during the year, both being at a premium for many years.

The move to new premises, so long promised, so long delayed, will be hailed with relief.

Surveys undertaken included Moora, Warburton, Mullewa, Gnowangerup, Swanbourne and Graylands Hospitals. All were conducted satisfactorily.

With the future scope of work still undecided, there was considerable apprehension and worry amongst the staff at all levels when the year ended. Considering their level of technical excellence, this seemed hardly fair.

4. Haematology

The work of the section is summarised in Table IV of the appendix.

The total tests for the year exceeded 200 000 but there was a natural large drop after September, when the Sir Charles Gairdner work was removed without any consultation or warning. This work accounted for two-thirds of the haematology section's load, and left about 70 000 tests done in the central laboratory plus the 100 000 or more done in country branches which are under the control of the haematological staff so far as metholodogy, quality control etc., are concerned. The removal of this volume of work produced a natural drop of morale amongst the staff of the section. At the end of the year the section was left with the Blood Banking, Vitamin B_{12} and folate estimations for the major hospitals.

There were no major changes in methodology during the year. Towards the year's end, preliminary work was undertaken to produce our own thromboplastin from human brain material aligned with the United Kingdom International Standard : work was done in fibrinogem assay and degradation products.

The only major piece of equipment purchased was a Freeze drier, allied to the production of thromboplastin.

Staff

The haematologist resigned from his position on 5th January, although he maintained a link with the section until August, 1973.

One registrar resigned at the end of the year.

Dr. K. F. Bendall, M.R.A.C.P., F.R.C.P.A. joined the staff as Clinical Haematologist in September.

There were no major changes in technical staff, though the numbers occupied in the section have been reduced with the change in work load.

Buildings

No change : the move to the new building is anticipated with considerable enthusiasm.

Surveys

Some 10 000 tests were done in the course of various surveys as listed under Biochemistry, and also for Broome, Port Hedland, Derby and Roebourne hospitals and doctors, without incident.

In summary, as with other sections in the division, there is considerable worry amongst all the staff as to the future of the division of the State Health Laboratory Services. A definitive statement would be welcome, and it is hoped that the level of technical excellence of the section is recognised by adequate employment in the future.

5. Radioisotopes

For the work done during the year see Table V appendix.

This section has gone from strength to strength during the year, and has not noticed the encroachment of University in the Pathology field. There has been a general increase in work and a continuing diversification of methods. For example, the older microbiological method for Vitamin B_{12} was replaced by a Radioisotopic method with a reduction in analysis time from 7-10 days to less than 48 hours. Placental function can now be evaluated by H.C.S. measurements, and the Unit has been asked by the Commonwealth Radiation Laboratory to evaluate test kits for folic acid, Vitamin B_{12} and thyroxine measurements.

Staff

One officer was placed in charge of the technology of the section. He proceeded on a course of study at Lucas Heights during the year. A more stable and better trained staff have produced better results.

Buildings and Equipment

No major change in the year.

In all, this section is less likely to be affected than most by the current uncertainties.

6. Morbid Anatomy and Cytology

The work done is indicated in Table VIA and VIB appendix.

Despite the assumption by the University Pathology Department of the Sir Charles Gairdner Hospital biopsy and autopsy work in February, 1973, the total surgical biopsies hardly changed in number, due partly to natural increase from the country and partly to work channelled in from outlying metropolitan areas.

Cytology overall showed a slight increase so that it is fair to say that the section has not suffered from the withdrawal of the Sir Charles Gairdner Hospital work.

The staff position eased during the year ; the load on the two former histopathologists had been considerable.

One pathologist joined the staff in January, 1973. One Registrar in Pathology was recruited in January, leaving in December, 1973.

A new post—level 3—was created in charge of Cytology Technology.

Buildings and Equipment

No major changes.

Courses

One technologist course in Cytology in Melbourne for 3 months.

One pathologist, one technologist—Symposium on Cytology, August, 1973, in Sydney

One technologist visited several pathology institutions in Europe during vacation there.

There were no clinical autopsies after the University take-over but there was a 13 per cent. increase in forensic work : this entails much journeying and many court appearances.

Frozen sections were more in demand, especially at Osborne Park and Pinjarra.

Morale was shaken by the take over of work by the University—perhaps not so severely in this section as in others. Undoubtedly definitive statements about the future work of the laboratories, and a move to better quarters, would be a great tonic. Already one can say that the Cytology subsection is functioning better than it has for several years with a better and more competent staff, and that the standard of biopsy work is high.

7. Serology

The work done is summarised in Table VII in the appendix which shows that there was a 25 per cent. increase in work done in 1973 compared with 1972.

Surveys

Several serology surveys were carried out during the year most being in collaboration with the Community Health Services. In all 2 527 sera were received on which 3 197 tests were carried out. Table below gives details of the geographical areas in which testing was done.

SURVEYS 1973

Origin	Date Received	Tests Done	No. of Sera
Gnowangerup	9/1/73 to 27/1/73	WR, RPCFT, VDRL	186
Gnowangerup	9/1/73 to 27/1/73	FTA (Abo)	20
Kununurra	Commencing 29/3/73	VDRL	160
Geraldton	Commencing 2/6/73	WR, RPCFT, VDRL and FTA (Abo)	135
Coolbellup	21/5/73	VDRL, FTA (Abo)	20
V.D. Clinic Port Hedland	10/9/73	WR, RPCFT, VDRL	....
Broome	18/9/73	WR, RPCFT, VDRL	....
Derby	20/9/73	WR, RPCFT, VDRL	905
Roebourne	1/10/73	WR, RPCFT, VDRL	....
Meekatharra, Karalundi, Wiluna, (Dr. Alpers)	7/2/73	VDRL	163 Aboriginal
Meekatharra, Karalundi, Wiluna, (Dr. Alpers)	30/4/73	VDRL Toxoplasma HA	84 Aboriginal
Moora	26/6/73	VDRL,	236
		FTA (Abo)	187
Warburton	23/7/73	VDRL	344
		FTA (Abo)	27
		Toxoplasma HA	342
		Leptospire ACG	88
Mullewa	22/10/73	VDRL	294
		FTA (Abo)	6

New Antigens

1. Reiter Antigen

In mid-year there was a change-over in Reiter antigen used in the R.P.C.F. test. This was necessary because of a cutting-off of supplies from a European firm. An American brand was tried and found unsatisfactory ; a British brand was then adopted although it gives an increased percentage of re-active results compared with the previous brand.

2. Toxoplasma H.A. antigen

In August a change was made in the method of preparing Toxoplasma haemagglutination antigen: this is now done in tissue culture instead of mice. With this antigen the titres have been somewhat lower than previously, but the method of preparation is much less laborious.

3. Leptospira Hardjo

At the request of medical practitioners this was added to the range of leptospira antigens. Tests on some farm animals in the South West and at Derby in the North have shown serological evidence of the disease but to date no human cases of leptospirosis hardjo have been described.

4. Streptozyme

From 20·8·73 to 3·10·73 this test was carried out on all sera with antistreptolysin O Titre readings of 100 units or less. These numbered 67. In addition 7 sera with ASO titres of 250 units or greater were tested and all of these were positive.

Streptozyme results on 67 sera with negative ASOT findings

ASOT readings	Streptozyme readings		
	Positive	Negative	Doubtful (lack of agreement between persons reading results)
less than 25 units	....	20	1
25	1	10	....
50 units	8	11	2
100 units	6	4	4

Difficulty was experienced in interpreting some results. These are expressed as doubtful reactions. This problem is considered a weakness in the test as different people made recordings which were at variance. Correlations were not made with clinical findings so the value of doing this test in addition to the ASOT is not known but our findings support the claim reported in the literature that this test picks up a number of streptococcus A antibodies not detected by the ASOT.

Syphilis

There has been a further marked increase in this work, with increased use of the F.T.A. Absorption test. All positive and problem sera are referred routinely to the V.D. reference Laboratory London and it is most pleasing to record that there were no serious discrepancies between our results and those in London. The only differences were in degrees of positiveness.

Automated equipment for the CF tests and A.R.T. has arrived and preliminary work has been carried out. When the move is completed to the new laboratories this equipment will be brought into routine use.

Cytogenetics

A member of the staff of this unit visited the Chromosome Conference in Brisbane in 1973 and later visited cytogenetics laboratories in Brisbane and Sydney. In 1973 members of the staff have published two papers on cytogenetics.

Quinacrine banding of chromosomes has been successfully used for the identification of individual chromosomes. In this way various abnormalities have been detected. A computerised chromosome registry has been brought into use. Cytogenetics work has much increased during the year with specimens coming from country areas as well as from the metropolitan area. In this work much help was given by the country laboratories. Referrals have come from the new Genetics Clinic at a Maternity Hospital in Perth, and there is close liaison with our cytogenetics Medical Officer and the University Department of Obstetrics. Skin cultures from the laboratory's cytogenetics unit are supplied to workers in the maternity hospital for biochemical analysis.

Forensic Serology

There has been a marked increase of work in 1973 compared with 1972. Lectures and demonstrations to police of all ranks have also been given. Court appearances are a heavy demand on staff. On some occasions the staff have had to attend the scene of the crime to obtain specimens. In one such case this meant a journey of over 100 miles with, 5 days spent in collecting material at the site and subsequent examination of several hundredweights of mud and ashes.

A symposium on the Forensic Sciences was held in Sydney in 1973. This was attended by one member of the Forensic Section who also visited the Forensic Science Laboratories in Sydney and continued to a 4 day conference on Microscopy in Canberra.

IV. BRANCH LABORATORIES

In section I details are given of new Branch laboratories brought into operation in 1973. With the continued opening-up of the North West of Western Australia it is obvious that more laboratories will have to be provided for the isolated communities.

Table I of the appendix gives details of work done in 1973.

The larger Branch laboratories are beginning to show a slowing down of the rate of increase in work per annum but as is to be expected the newer laboratories showed a marked increase in their work, compared with the previous year. This reflects the increasing use of the laboratories by the local medical practitioners as they become satisfied with the standard of work.

Housing and transport problems are becoming less pressing and as far as possible all the senior staff from the central laboratories visit the branch laboratories at frequent intervals.

The technologists in the country branches work long hours under trying conditions without complaint and the State has every reason to be grateful to them.

V. RESEARCH

The continuing shortage of staff, equipment, and space limits the amount of research which is possible. In spite of this a significant amount of good investigational and developmental work is being carried on.

VI. PUBLICATIONS

The following is a list of papers by members of the Department published during 1973 :—

1. " Enrichment procedures for the isolation of Salmonella, Arizona Edwardsiella and Shigella from faeces " by J. B. Iveson. Journal of Hygiene, Cambridge, 1973, Volume 71, Page 349.
2. " Salmonella javiana infection in an infant associated with a Marsupial, the Quokka, Setonix brachyurus, in Western Australia " by J. B. Iveson and S. D. Bradshaw, Journal of Hygiene, Cambridge, 1973, Volume 71, page 423.
3. " Prenatal Diagnosis. Results of Cytogenetic Analysis of Amniotic Fluid Cell Cultures " by Marie T. Mulcahy and Joy Jenkin.

VII. TEACHING

This continues to be a heavy demand on staff. Teaching and lectures are now given to nurses, technologists, police and to University Medical students.

VIII. SURVEYS

More and more requests are being received for surveys of all kinds and it is likely that they will increase considerably as the Community Health Service gets into full operation.

ACKNOWLEDGEMENT

Acknowledgement is made to all staff for their continued good work under unpleasant conditions and with lack of security as to their future in the service. This is much to be regretted.

Table IA

STATE HEALTH CENTRAL LABORATORIES—SUMMARY OF TESTS DONE 1973

	State	Common-wealth	S.C.G.H.	Others	1973 Total	1972 Total	1973 Increase
							%
MICROBIOLOGY—							
A. Clinical Bacteriology	57 512	749	16 810	3 851	78 922	89 410	....
B. Waters and Sewerage	14 945	....	....	....	14 945	14 115	5·9
C. Enteric Diseases	30 467	329	454	....	31 250	28 096	11·2
D. Mycobacteria	....	23 285	....	....	23 285	28 488	....
E. Mycology	21 680	781	8 068	....	30 529	24 533	24·4
F. Virology	227 584	4 080	19 684	....	251 348	242 038	3·8
BIOCHEMISTRY	47 602	8 245	366 546	41 853	464 246	380 491	22·0
HAEMATOLOGY	67 781	3 039	130 375	25 079	226 274	233 283	....
SEROLOGY	129 596	2 994	9 033	1 339	142 962	114 377	25·0
RADIOISOTOPE	10 734	4 166	8 834	5 471	29 205	9 894	Nearly 3 times
HISTOPATHOLOGY—							
A. Histopathology and Morbid Anatomy	31 100	1 865	815	8 775	42 555	47 839	....
B. Cytology	4 231	3 500	4 220	11 097	23 048	22 980	0·3
Total	643 232	53 033	564 839	97 465	1 358 569	1 235 544	10·0

Table IB

STATE HEALTH LABORATORIES—SUMMARY OF TESTS DONE

IN COUNTRY LABORATORIES

	Total 1973	Total 1972	Increase 1973
			%
Albany	34 953	34 208	2·2
Broome	13 621	11 708	16·3
Bunbury	47 163	37 233	26·7
Busselton	18 749	20 280	....
Carnarvon	22 908	16 937	35·3
Collie	6 415	5 843	9·8
Derby	31 568	38 269	....
Esperance	12 313	8 491	45·0
Geraldton	47 958	45 284	5·9
Kununurra	984	426	131·0
Manjimup	16 900	17 360	....
Margaret River/Augusta	4 196	4 442	....
Merredin	25 798	18 886	36·6
Narrogin	41 309	33 191	24·5
Northam	26 323	21 647	21·6
Pinjarra	11 574	6 830	69·5
Port Hedland	30 384	24 800	22·5
Wyndham	23 054	13 962	65·1
Roebourne	926	....	Opened Nov. 1973
Total	417 096	359 797	15·9

Table IIA

CLINICAL BACTERIOLOGY—TESTS DONE 1973

	Source				1973 Total	1972 Total	1973 Increase
	State	Common-wealth	S.C.G.H.	Others			
Animal Inoculations	24	....	....	....	24	....	....
Blood Specimens	136	8	523	1	668	1 763	....
C.S.F. Specimens	33	2	493	6	534	960	....
Faeces	....	....	24	....	24	43	....
Foodstuffs	1 820	....	....	....	1 820	2 160	....
Sensitivity Tests	3 572	68	1 784	557	5 981	11 161	....
Serous Effusions	34	10	214	32	290	623	....
Sputum	382	120	2 640	224	3 366	8 934	....
Swabs all Sources	3 230	88	1 964	648	5 930	5 704	4%
Urine Examinations	9 394	327	7 627	2 364	19 712	23 095	....
All urogenital specimens including rectal swabs and urine for V.D. examination	37 934	73	417	....	38 424	29 256	31·3%
Water	398	2	....	....	400	199	101 %
Others	555	51	1 124	19	1 749	5 512	....
Total	57 512	749	16 810	3 851	78 922	89 410	....

Table IIB

WATER AND SEWERAGE SURVEYS—WORK DONE 1973

	1973 Total	1972 Total	1973 Increase
			%
Water—			
Drinking	8 897	9 063	....
River, Ocean	3 379	3 220	4·9
Sewerage	2 669	1 832	45·7
Total	14 945	14 115	5·9

Table IIC

ENTERIC DISEASE LABORATORY—TESTS DONE 1973

	Source				1973 Total	1972 Total	1973 Increase
	State	Common-wealth	S.C.G.H.	Others			
							%
Antigen and Animal inoculation	1 934	....	....	....	1 934	4 920	....
Faeces specimens	17 613	180	421	....	18 214	14 616	24·6
Foodstuff	2 714	....	....	....	2 714	2 024	34·1
Sensitivities	3 138	77	28	....	3 243	1 896	71·0
Others	5 068	72	5	....	5 145	4 640	10·9
Total	30 467	329	454	....	31 250	28 096	11·2

Table IID

TUBERCULOSIS SECTION—EXAMINATIONS IN 1973

	1973 Total	1972 Total	1973 Increase
			%
Sputum	14 419	20 230	....
Gastric contents	502	581	....
Laryngeal swabs	....	3	....
Pleural fluids	276	313	....
Bronchial lavage	2	6	....
Cerebral spinal fluid	141	69	104·3
Urine	2 352	1 989	18·3
Miscellaneous	2 809	2 086	34·7
Confirmation tests	1 171	1 253	....
Sensitivities	532	1 111	....
Virulence tests	513	556	....
I.N.A.H. level	542	270	100·7
Smears for M. leprae	26	21	23·8
Total	23 285	28 488	....

Table IIE

MYCOLOGY—WORK DONE 1973

	Source				1973 Total	1972 Total	1973 Increase
	State	Common-wealth	S.C.G.H.	Others			
							%
Skin, Hair, Nails	9 244	658	168	....	10 070	8 169	23·3
Sputum, CSF, Biopsy, P.M., Drainage and Wound Swabs	439	14	1 581	....	2 034	2 359	....
Swabs: Cervical, Vaginal, Throat, Mouth, Ear	7 878	94	5 290	....	13 262	11 733	13·0
Identifications—Candida and Trichophyton	1 140	9	429	....	1 578	1 150	37·2
Miscellaneous	2 979	6	600	....	3 585	1 122	19·5
Total	21 680	781	8 068	....	30 529	24 533	24·4

Table IIF

VIROLOGY SECTION—TESTS DONE 1973

	Source			1973 Total	1972 Total	1973 Increase
	State	Common-wealth	S.C.G.H.			
						%
Preparation of Inocula	19 263	333	1 187	20 783	22 391	....
Tissue culture	26 751	340	1 442	28 533	28 862	....
Egg Inoculation	3 361	10	71	3 442	2 530	36·0
Animal Inoculation	13 394	120	1 525	15 039	24 219	....
Neutralisation	100 751	1 178	11 163	113 092	90 664	24.7
Haemagglutination	8 011	303	849	9 163	13 877	....
Haemadsorption	12 599	802	74	13 475	10 737	25·5
Complement Fixation	25 223	782	2 809	28 814	36 266	....
Others	18 231	212	564	19 007	12 492	....
Total	227 584	4 080	19 684	251 348	242 038	3·8

Table IIIA

BIOCHEMISTRY DEPARTMENT—TESTS DONE 1973

	Source				1973 Total	1972 Total	1973 Increase
	State	Common-wealth	S.C.G.H.	Others			
							%
Serum/Plasma Tests	46 613	7 826	361 608	41 417	457 464	375 220	21·9
C.S.F. Tests	14	6	1 614	23	1 657	1 187	39·6
Gastric contents	6	3	36	1	46	7	6½ times
Effusions	2	16	209	....	227	112	102·7
Urine examinations	741	372	2 355	321	3 789	2 854	32·8
Metabolic tests	143	11	469	29	652	683	....
Others	83	11	255	62	411	428	....
Total	47 602	8 245	366 546	41 853	464 246	380 491	22·0

Table IIIB

TOXICOLOGY

The following analyses have been requested in 1973.

1. Biological specimens (Drugs) Request	December Quarter	1973 Total
Dilantin	89	353
Cholinesterase	22	330
Barbiturates	49	211
Salicylate	57	208
Alcohol	18	175
Bromide	32	123
Organochlorides	4	63
Miscellaneous	16	51
Narcotics	3	45
Amphetamines	4	40
Drugs (not specified)	13	38
pH	1	19
Dapsone	1	13
Heavy metals	2	7
Carbon monoxide	1	6
Total	312	1 682
2. Public Health Specimens (Food and Clean Air)		
Mercury	....	109
Pesticides—analysis of 6 in each specimen	....	29
PCB	....	37
Benzo—α—pyrenes	16	33
Whisky samples	25	25
Meat samples	3	3
Total	44	236
3. Forensic (Post-mortem)		
Alcohol only	23	23
Complete drugscan	18	18
Total	41	41

Total for 1973 — 1 959

Table IV

HAEMATOLOGY DEPARTMENT—TESTS DONE 1973

	Source				1973 Total	1972 Total	1973 Increase
	State	Common-wealth	S.C.G.H.	Others			
							%
Red Cells—							
Total levels	7 076	333	12 677	2 553	22 639	22 963	....
Haematocrit	7 076	333	12 677	2 553	22 639	22 963	....
Absolute values	21 228	999	38 031	7 659	67 917	68 889	....
Sedimentation rate	3 518	214	8 967	439	13 138	12 785	2·8
Film examination	1 805	68	283	521	2 677	1 238	116·2
Fragility tests	....	....	11	....	11	5	120·0
Reticulocytes	27	14	2 037	5	2 083	2 130	....
Stipple cells	2	....	....	....	2	3	....
Hb. levels	7 575	333	12 677	2 553	23 138	23 009	0·6
Platelets	80	20	2 469	51	2 620	3 745	....
White Cells—							
Total	7 076	333	12 677	2 553	22 639	22 963	....
Differential	251	104	7 896	410	8 661	11 230	....
L.E. Cells and Latex cells	42	37	314	59	452	580	....
Direct Eosinophil count	3	....	352	5	360	698	....
Blood Grouping—							
A.B.O.	4 311	71	2 302	1 797	8 481	6 849	23·8
Rhesus D.	4 311	71	2 302	1 797	8 481	6 841	24·0
Antibody screen, titre and Identification	2 709	72	2 243	1 848	6 872	6 663	3·1
Compatibility	11	2	6 761	50	6 824	6 596	3·5
Genotype	42	4	1	24	71	67	6·0
Paternity grouping	4	....	4	2	10	18	....
Folic Acid	....	....	....	....	....	1 623	Done at Radio-isotope Dept.
Vitamin B12 Assay	...	....	....	....	....	1 619	
Bone Marrow Examinations	11	1	77	15	104	169	....
Plasma Viscosity	1	....	1	....	2	1	100·0
Clotting Functions—							
Bleeding time	16	1	174	1	192	283	....
Clotting time	16	1	1 203	3	1 223	2 027	....
Prothrombin time	368	21	3 485	37	3 911	6 092	....
Other Coagulation Tests	25	1	599	7	632	711	....
Others	197	6	155	137	495	523	....
Total	67 781	3 039	130 375	25 079	226 274	233 283	....

Table V

RADIOISOTOPE SECTION—WORK DONE 1973

	Source				1973 Total	1972 Total	1973 Increase
	State	Common-wealth	S.C.G.H.	Others			
Thyroxine T4	2 889	1 598	4 229	3 137	11 853	5 185	More than twice
Tri-iodothyronine uptake T3	892	806	1 757	1 016	4 471	3 693	21·1%
Cyanocobalamin B12	2 778	214	1 187	558	4 737	*623	7·5 times
Folic Acid	3 162	232	1 147	499	5 040	*	....
Insulin	126	....	196	159	481	164	Nearly 3 times
Shilling's test	73	58	114	15	260	33	8 times
Digoxin assay	354	278	188	26	846	187	4·5 times
Red cell survival and Blood volume studies	10	1	9	....	20	7	Nearly 3 times
Human chorionic Somatomammotrothin	72	979	....	61	1 112	....	....
Iron clearance	12	....	2	....	14	....	....
Iron neutralisation	30	....	3	....	33	....	....
Iron absorption	16	....	2	....	18	....	....
Australian Antigen	130	....	....	....	130	....	....
Radioisotope Folates	178	....	....	....	178	....	....
Insulin Turnover	12	....	....	....	12	....	....
Blood loss, Ferrokinetic study	....	....	....	....	....	2	....
Total	10 734	4 166	8 834	5 471	29 205	9 894	Nearly 3 times

*In 1972 most of B_{12} and all Folic acid examinations done at Haematology Department.

Table VIA

HISTOPATHOLOGY AND MORBID ANATOMY—WORK DONE 1973

	Source				1973 Total	1972 Total	1973 Increase
	State	Common-wealth	S.C.G.H.	Others			
							%
Autopsies—							
Forensic	1 110	....	....	....	1 110	997	11·3
Others	....	....	....	....	....	73	....
Sections—							
Autopsy, Forensic	13 481	....	....	....	13 481	13 110	2·8
Autopsy, Others	4 909	....	....	....	4 909	1 190	12·5
Biopsy	3 934	1 865	798	8 769	15 366	20 448	....
Miscellaneous	279	....	....	....	279	1 330	....
Special Staining	6 056	....	....	....	6 056	7 583	....
Frozen Sections	324	....	17	6	347	1 408	....
Macro Sections	....	....	....	....	....	147	....
Smears	10	....	....	....	10	....	....
Immuno Fluorescent Antibodies—							
Smears	241	....	....	....	} 997	1 553	....
Tissue Sections	756	....	....	....			
Titres	....	....	....	....			
Total	31 100	1 865	815	8 775	42 555	47 839	....

Table VIB

CYTOLOGY—WORK DONE 1973

	Source				1973 Total	1972 Total	1973 Increase
	State	Common-wealth	S.C.G.H.	Others			
							%
Slides	4 231	3 500	4 220	11 097	23 048	22 980	0·3

	1973		1972		Increase 1973	
	No. of Cases	No. of Slides	No. of Cases	No. of Slides	Cases	Slides
					%	%
Lung Specimens	3 284	4 860	4 210	5 779	....	....
Cervical specimens	7 101	16 570	5 996	14 416	18·4	14·9
Other specimens	444	1 087	395	1 443	....	....
Special slides	....	531	....	1 342	....	....
Total	10 829	23 048	10 601	22 980	2·2	0·3

Table VII

SEROLOGY DEPARTMENT—TESTS DONE 1973

	Source				1973 Total	1972 Total	1973 Increase
	State	Common-wealth	S.C.G.H.	Others			
							%
Treponemal tests	88 088	1 958	2 574	....	92 620	71 427	29·7
Bacterial serology	21 288	721	4 372	1 055	27 436	23 706	15·7
Viral, Rickettsial, Helminthis and Protozoal tests	8 327	240	1 477	....	10 044	9 614	4·9
Hormone tests	429	4	201	283	917	908	1·0
Medico-legal tests	10 262	....	....	....	10 262	7 574	35·5
Chromosome studies	495	....	....	....	495	380	30·3
Others	707	71	409	1	1 188	768	54·7
Total	129 596	2 994	9 033	1 339	142 962	114 377	25·0

Note : Gonococcal Rheumatic and Leptospiral tests, listed separately in 1972 report are now all included with Bacterial serology. Likewise Hydatid tests, which are included with Viral, Rickettsial, Helminthic and Protozoal tests as well as Histoplasmosis T.A. Latex and Trichinella Latex tests which were included with Others in 1972.

Appendix III

Tuberculosis Control Branch

F. G. B. Edwards, B.A., LL.B., M.B., B.S., F.C.C.P., F.A.C.M.A.,
Director

Morbidity

There was a slight reduction in the numbers of cases reported as compared to 1972. Excluding notifications of patients transferring from other Australian states, there were 143 cases of mycobacterial disease, representing a morbidity rate of 13·4 per 100 000. Compared with the 1972 figures the numbers of cases decreased by 5·9 per cent. and the rate by 6·9 per cent. This was against the trend shown in the 1971–2 period when the rate had increased by 13·4 per cent., but in conformity with the general trend in the years preceding 1972.

The rate for males of all age groups was 16·8 and for females 9·8 per 100 000. This represented a reduction in the corresponding 1972 male rate of 10.6 per cent., but no change in the female rate. As in previous years the great majority of cases in males occurred in the 45 and over age groups, whereas in females they were evenly distributed amongst all age groups of 20 and over (Fig. 1).

Mortality

The mortality rate continued at a low level, being 1.0 per 100 000 for the whole population, the same rate as in 1967, since when there has been little change. The average age at death was 66.

Of the 11 deaths, 8 were in males and 3 in females. 3 were active cases at the time of death ; in the remaining 8, death was the long term result of past tuberculosis episodes, inactive for many years, and of concomitant old age diseases.

Site and Type of Disease

Of the total of 143 active cases, 107 (74·8 per cent.) were pulmonary and 36 (25·2 per cent.) were extrapulmonary. Details are given in Table 4.

As will be seen from the table, no cases of primary disease were reported, as compared with 2 in 1972. Primary disease generally is occurring uncommonly, and this may be the result of early diagnosis and rapid institution of effective treatment of infectious pulmonary cases. Of the persons with active pulmonary disease (including pleural effusions) 70.1 per cent. were males and 29.9 per cent. females, slightly more than a two to one ratio. This repeated almost exactly the corresponding percentages for the previous year. Only 13.1 per cent. of pulmonary cases were in the advanced stage at diagnosis.

The 12 genito-urinary cases were equally divided between the sexes. 6 had renal disease, 2 tuberculous epidymo-orchitis and 4 had tuberculosis of the female genital tract.

Lymph gland infections continue to be the most frequent type of extrapulmonary disease reported, accounting for 52.8 per cent. of these cases. Of the 19 cases reported, 8 were females and 11 males ; this is a reversal of the usual predominance of females with glandular disease.

3 cases of skeletal disease were reported—one each of the spine, hip and wrist.

Reactivations

There were 7 (4.8 per cent.) reactivations of disease in persons with a previous documented episode of active tuberculosis, giving a population reactivation rate of only 0.7 per 100 000. This is a decrease of 1.4 since 1969 and 2.6 since 1964. The recent figures reflect the prevailing low reactivation rate in the Australian States generally, by comparison with overseas figures, e.g., Ontario whieh has a highly developed control programme, reported a rate of 2.5 per 100 000 for 1972. The improved Australian figures are due to the high proportion of patients who have received adequate drug treatment for their original disease

Table 5 summarizes the overall reactivation rates for the past 10 years. The risk of reactivation in persons with previously doeumented episodes of active tuberculosis which have not been treated with antituberculosis drugs has been estimated on the basis of overseas findings at 1 in 78 per annum. In patients receiving inadequate chemotherapy the estimated rate is slightly lower—about 1 in 90. On the other hand, the risk is much lower—about 1 in 800—in persons previously receiving adeqnate treatment. The risk in the subgroup of those patients who have adequate treatment for uncomplicated minimal or moderate pulmonary disease has not been worked out but must be very small indeed.

Of the 7 reactivations occurring in 1973, 1 patient had achieved eontrol of his original disease by means of bilateral pneumothoraces ; one had been treated by an artificial pneumothorax and a very short period of antituberculosis drugs ; 2 had had unilateral pneumothoraees only ; 2 had received inadequate treatment during the early chemotherapy period ; the final patient although treated in 1962–3 during the " adequate " chemotherapy period was later discovered to be quite unreliable and to have begun taking her drugs irregularly soon after leaving hospital.

Except for this last patient, in all cases the time which elapsed between the initial episode and reactivation was 20 years or more.

Tuberculosis in Australian born and Non-Australian born persons

Non-Australian persons contributed 50 per cent. of the cases, compared to 55.3 per cent. in the previous year. The rates for non-Australian born males and females were 31 and 18 per 100 000, compared to 12 and 8 per 100 000 respeetively in the Australian born. (Tables 8 and 9). It is of interest that between 1958 and 1973 the rates in the Australian born population declined by 76 per cent. in males and 68 per cent. in females. In the non-Australian born the decline was almost identical, viz. 79 per cent. in males and 68 per cent. in females. In spite of these substantial reductions, the existing rates amongst the non-Australian born, who currently comprise 27 per cent. of the population, indicate a significant pool of latent infection amongst them which will continue to give rise to substantial numbers of active cases.

Whilst only 46.4 per cent. of the pulmonary cases arose in Australian born persons, the pattern was somewhat different in the extrapulmonary eases, 67 per cent. being amongst the Australian born. This difference was due mainly to a preponderance of Australian born children with lymph gland infeetions, i.e., 16 out of a total of 19 cases.

Morbidity according to Country of Origin

Cases listed according to country of birth showed a wide distribution among many countries, with a tendency to higher yields amongst individuals born in countries with a current or relatively recent high incidence of tubereulosis : e.g., Burma (5 cases), Greece (4), India (5), Italy (7), Poland (3), Yugoslavia (3). 24 patients were born in the United Kingdom and Ireland, but as these individuals belong to by far the the largest non-Australian born group, their morbidity rate was comparatively low.

The majority of these patients (62.5 per cent.) emigrated to Australia more than 5 years ago, whilst 15.3 per cent. arrived within the year preceding diagnosis and the remainder (22.2 per cent.) within 1 to 4 years of diagnosis. 20 of the 24 originating from the United Kingdom emigrated over 5 years ago.

Bacteriological Status

For completeness' sake and other reasons it has been found necessary to include cases due to infection with atypical mycobacteria in the total annual tuberculosis statistics. From the point of view of contact checking, it is important to accept notification of all cases in which initial clinical bacteriological and other findings suggest a diagnosis of tuberculosis. Final identification of the mycobacterium responsible for the patient's disease may not be made for many weeks.

The infecting mycobacterium was cultured and identified in 105 cases (73.4 per cent.), i.e., in 74 of the pulmonary cases and 31 of the extrapulmonary group.

In those patients presenting with advanced pulmonary lesions positive cultures were obtained in 92.9 per cent ; in those with moderately advanced disease this figure was 79.5 per cent., reducing to 52.3 per cent. in those with minimal disease only.

Positive cultures enabling identification were obtained in 15 of the 19 patients with lymph node disease ; in the remaining 4, histapathological findings were compatible with a tuberculosis etiology.

Bacteriological Identification and Drug Resistance
M. Tuberculosis

Of the total of 105 strains of mycobacteria isolated from patients with mycobacterial disease 79 were identified as the human strain of M. Tuberculosis and 2 were identified as M. bovis. 17 previously untreated patients were found to be excreting streptomycin resistant M. tuberculosis, i.e., 21.5 per cent. of all patients excreting these organisms. There were single instances of primary resistance to most other antituberculosis drugs. In one case there was primary resistance to both streptomycin and isoniazid, and in another case the streptomycin, PAS and isoniazid.

Resistance developed during the course of treatment in 1 case only and that was to streptomycin.

Atypical Mycobacteria

24 atypical strains were isolated from patients with disease which satisfied the criteria required for a diagnosis of atypical mycobacteriosis. 6 of these were scotochromogens, 16 (60 per cent.) were identified as M. intracellulare, 1 was identified as M. Kansasii, and 1 as M. fortuitum.

Of the 6 scotochromogens, all were completely resistant in vitro to streptomycin. PAS and isoniazid, but sensitive to cycloserine, prothionamide and B663. There was a varying pattern of sensitivity to the remaining drugs.

Amongst the 16 M. intracellulare strains there was also a varying pattern of sensitivity, with the exception of streptomycin, PAS, isoniazid and rifampicin, to which all strains were resistant, and B663, to which all were sensitive.

The organs which were involved are set out in Table 12.

Apart from these cases, casual isolations of atypical mycobacteria were obtained in 61 patients. 49 (80.3 per cent.) of these isolates were identified as M. intracellulare, compared to 66.7 per cent. of the pathogenic strains.

Source of Cases

Since the suspension of compulsory mass chest X-ray surveys of adults in January, 1973, efforts have been concentrated on other sources of detection of active tuberculosis. Amongst these were private practitioners and general hospitals, which in 1973 were credited with finding 28.7 per cent. and 24.5 per cent. respectively of the total cases. Each was responsible for one half of the extrapulmonary cases. Chest clinics continued to make a large contribution in the pulmonary group, being responsible for 42.1 per cent. This was achieved partly by means of the clinic follow-up system of persons with pulmonary abnormalities of tuberculosis origin, or of doubtful etiology, such as apparently non-specific fibrosis. A special voluntary X-ray survey amongst men of 45 years of age and over resulted in a small yield of pulmonary cases.

Three cases were diagnosed and notified as a result of autopsy ; the ages of those patients being 77, 59 and 68. This kind of presentation in older persons appears to be an established feature of the epidemiology of the disease in countries with well developed control programmes.

Prevention

On a community basis, the prevention programme was continued by :—

(a) B.C.G. vaccination of second year secondary school students. This needs to be maintained because of the increasing movement of young persons into and out of the country, with the opportunity of importing infection acquired in countries of higher tuberculosis incidence.

(b) B.C.G. vaccination of the new born in the north of the State, the primary aim being leprosy control. This programme is carried out in conjunction with the Director, Community Health Services, who is responsible for leprosy control.

Other activities

The branch is now responsible for X-ray supervision of miners in the various mining centres throughout the State, under the medical requirements laid down in the Mines Regulation Act. During 1973, 41 mining centres were visited by a mobile unit. Apart from taking chest X-rays of miners, short periods were set aside for X-rays of the non-mining population, on a voluntary basis, employing the usual type of 70 mm. film exposure.

As far as the miners' X-rays are concerned, the type of films required depend mainly on the degree of dust exposure in each individual centre. Large films are required, for instance, for miners in the gold, nickel, manganese and iron ore centres. X-rays are taken on entry into the industry and thereafter yearly or biennially, again according to the degree of dust exposure.

Table 1

TUBERCULOSIS—MAIN STATISTICAL FIGURES

Year	Mean Population 1,000s	Notifications (includes transfers-in)				No. on Register (Pulm.) at 31st Dec.	No. on Register per 100,000 (Pulm.)	Number Receiving T.B. Allowance at 31st Dec.	Deaths			Death Rate per 100,000	
		Pulm. (incl. Pleural effus.)	Non-Pulm.	Total	Pulm. per 100,000				Pulm.	Non-Pulm.	Total	Pulm.	All Forms
1950 ..	558	586	18	604	104·8	2,100	376	515	125	3	128	22·4	22·9
1951 ..	580	467	37	504	80·4	2,402	413	474	76	6	82	13·1	14·1
1952 ..	601	508	49	557	84·5	2,574	428	396	75	7	82	12·5	13·6
1953	621	378	34	412	60.6	2,762	445	361	43	3	46	6·9	7·4
1954	640	348	34	382	54·3	2,769	432	326	57	4	61	8·9	9·5
1955	659	413	39	452	62·7	2,965	450	330	31	2	33	4·7	5·0
1956	677	424	44	468	62·6	2,900	428	264	43	3	46	6·3	6·8
1957	692	332	32	364	47·9	2,786	403	198	36	1	37	5·2	5·3
1958	706	355	24	379	50·3	2,726	386	213	22	4	26	3·1	3·4
1959	726	320	34	354	44·1	2,684	369	182	24	....	24	3·3	3·3
1960	731	296	34	330	40·5	2,388	327	148	29	1	30	4·0	4·1
1961	737	209	41	250	28·4	1,349	183	89	18	1	19	2·4	2·6
1962	755	243	25	268	32·2	1,333	177	90	24	4	28	3·2	3·7
1963	773	216	28	244	27·9	1,218	158	92	13	....	13	1·7	1·7
1964	790	176	32	208	22·3	1,221	154	88	20	....	20	2·5	2·5
1965	806	153	25	178	19·0	919	114	65	12	....	12	1·5	1·5
1966	836	134	36	170	16·0	840	100	64	16	....	16	1·9	1·9
1967	877	137	34	171	15·6	814	93	54	9	....	9	1·0	1·0
1968	910	145	37	182	15·9	680	75	44	8	1	9	0·9	1·0
1969	947	133	27	160	14·0	659	70	43	8	....	8	0·8	0·8
1970	983	113	35	148	11·5	653	67	32	10	....	10	1·0	1·0
1971	1,029	113	30	143	11·0	625	61	27	17	2	19	1·6	1·8
1972	1,053	125	30	155	11·9	569	54	40	8	....	8	0·8	0·8
1973	1,068	110	36	146	10·3	522	49	15	11	....	11	1·0	1·0

Table 2

ANNUAL NOTIFICATIONS OF PULMONARY TUBERCULOSIS SHOWING STAGE OF DISEASE *

Year	Parenchymal Disease						Pleural Effusion		Total
	Minimal		Moderately Advanced		Advanced				
		%		%		%		%	
1952	122	24·0	275	54·1	101	19·9	10	2·0	508
1953	98	25·9	210	55·5	65	17·2	5	1·4	378
1954	96	27·6	178	51·1	74	21·3	....	....	348
1955	111	26·9	225	54·5	64	15·5	13	3·1	413
1956	127	38·0	217	51·1	72	17·0	8	1·9	424
1957	102	30·7	163	49·1	61	18·4	6	1·8	332
1958	91	25·6	187	52·7	72	20·3	5	1·4	355
1959	103	32·2	151	47·2	55	17·2	11	3·4	320
1960	89	30·1	144	48·6	49	16·6	14	4·7	296
1961	90	43·1	73	34·9	34	16·3	12	5·7	209
1962	117	48·1	84	34·6	36	14·8	6	2·5	243
1963	99	45·8	89	41·2	26	12·0	2	1·0	216
1964	71	40·3	81	46·0	23	13·1	1	0·6	176
1965	75	49·0	60	39·2	17	11·1	1	0·7	153
1966	59	44·0	54	40·3	18	13·4	3	2·2	134
1967	56	40·9	59	43·1	20	14·6	2	1·4	137
1968	71	48·9	59	40·7	11	7·6	4	2·8	145
1969	57	42·9	62	46·6	13	9·8	1	0·7	133
1970	51	45·1	47	41·6	10	8·9	5	4·4	113
1971	42	37·2	52	46·0	17	15·0	2	1·8	113
1972	51	40·8	50	40·0	20	16·0	4	3·2	125
1973	45	40·9	46	41·8	14	12·7	5	4·6	110

*Classified according to Diagnostic Standards N.T.A.

Table 3

TUBERCULOSIS NOTIFICATIONS FOR YEAR ENDED 31st DECEMBER, 1973

Showing Age, Sex, Form and Stage of Disease

Age Group	Males					Females					Persons					Total
	Pulmonary			Non. Pulm.	Pleur. Effus.	Pulmonary			Non. Pulm.	Pleur. Effus.	Pulmonary			Non. Pulm.	Pleur. Effus.	
	Min.	Mod. Adv.	Adv.			Min.	Mod. Adv.	Adv.			Min.	Mod. Adv.	Adv.			
0–4	....	....	...	6	....	....	....	....	7	....	....	....	....	13	....	13
5–9	....	....	....	1	....	....	....	....	2	....	....	....	....	3	....	3
10–14	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
15–19	....	....	....	....	1	....	1	....	....	....	....	1	....	....	1	2
20–24	1	....	....	1	1	2	1	....	1	....	3	1	....	2	1	7
25–29	2	2	1	2	1	....	3	....	1	....	2	5	1	3	1	12
30–34	2	....	....	1	....	2	1	1	3	....	4	1	1	4	....	10
35–39	1	2	....	....	....	1	1	....	....	....	2	3	....	....	....	5
40–44	2	3	....	....	....	1	....	1	2	....	3	3	1	2	....	9
45–49	4	2	2	3	....	2	2	....	....	....	6	4	2	3	....	15
50–54	1	4	1	2	....	1	1	2	....	....	2	5	3	2	....	12
55–59	5	2	1	....	....	2	1	....	1	....	7	3	1	1	....	12
60–64	3	8	1	....	....	1	1	....	....	....	4	9	1	....	....	14
65–69	3	4	....	....	1	1	....	....	1	....	4	4	....	1	1	10
70–74	3	4	....	1	....	1	1	....	....	1	4	5	....	1	1	11
75 and over	4	2	3	....	....	....	....	1	1	....	4	2	4	1	....	11
Total	31	33	9	17	4	14	13	5	19	1	45	46	14	36	5	146

Table 4

SITE AND TYPE OF DISEASE

Pulmonary				Extrapulmonary			
Diagnosis	No.	% of Pulmonary Cases	% of All Cases	Diagnosis	No.	% of Extra-pulmonary Cases	% of All Cases
Primary	....	....	....	Genito-urinary	12	33·3	8·4
Pleural effusion	5	4·7	3·5	Lymph glands	19	52·8	13·3
Post-Primary				Bone and Joint	3	8·3	2·1
1. Minimal	44	41·1	30·8	Meninges	1	2·8	0·7
2. Moderately advanced	44	41·1	30·8	Skin	1	2·8	0·7
3. Advanced	14	13·1	9·7				
Total	107	100	74·8	Total	36	100	25·2

Table 5

REACTIVATIONS

Previous Treatment	Number of Reactivations										Total
	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	
(1) No chemotherapy	8	6	5	4	4	7	2	6	4	3	49
(2) Inadequate chemotherapy—											
Without Surgery	13	5	13	5	4	11	6	5	3	4	69
With Surgery	5	2	1	4	1	....	....	....	....	....	13
(3) Apparently adequate chemotherapy	....	2	....	....	....	2	3	1	1	....	9
Total	26	15	19	13	9	20	11	12	8	7	140

Table 6

REACTIVATION RATES

Year	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
No. of reactivations	26	15	19	13	9	20	11	12	8	7
As % of total cases	12·5	8·4	11·2	7·6	4·9	12·5	7·4	8·4	5·2	4·8
Per 100 000 population	3·3	1·2	2·3	1·5	1·0	2·1	1·1	1·2	0·8	0·7

Table 7

ANALYSIS OF REGISTER AS AT 31st DECEMBER, 1973

A. Pulmonary Tuberculosis
(excluding Pleural Effusions)

Activity	Number on Register According to Original Extent of Lesions			Total
	Minimal	Moderate	Advaneed	
Active	48	75	15	138
Inactive—				
0–1 year	62	62	19	143
1–2 years	24	22	4	50
2–3 years	46	37	6	89
3–4 years	38	42	6	86
4–5 years	1	1	....	2
5+ years	....	....	....	....
	219	239	50	508

B. Pleural Effusion	14
C. Non-Pulmonary Tuberculosis	132
Total All Forms	654

Table 8

WESTERN AUSTRALIA : TUBERCULOSIS INCIDENCE BY COUNTRY OF BIRTH, 1961-1973 : MALES

Country of Birth	Population at 30th June, 1971 Thousands (Census)	Incidence per Thousand Persons												Total Notifications 1961–1973
		1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	
U.K. and Republic of Ireland	82·2	0·92	0·93	0·66	0·67	0·61	0·59	0·53	0·36	0·33	0·51	0·31	0·23	0·21	342
Germany	3·6	0·74	0·37	....	....	....	0·75	....	0·34	0·34	0·34	0·69	0·56	0·56	14
Greece	2·7	0·87	0·87	0·43	....	....	....	0·65	0·32	0·32	0·32	....	1·11	0·74	15
Italy	17·1	1·01	0·91	0·70	0·60	0·47	0·20	0·50	0·25	0·44	0·37	0·44	0·41	0·29	103
Netherlands	6·2	0·16	0·64	0·31	....	0·16	0·16	0·17	0·17	....	....	0·17	0·16	....	14
Poland	2·8	2·50	0·33	1·85	1·07	....	0·71	1·43	1·78	0·71	....	0·36	1·07	0·36	34
Yugoslavia	6·2	1·39	1·08	1·58	1·11	1·11	1·94	0·43	0·87	2·00	0·65	0·43	0·16	0·16	52
Other European	8·6	1·40	1·05	0·70	1·05	0·70	1·40	1·08	0·77	1·23	0·92	....	0·05	0·93	71
Other Birthplaces	23·8	0·86	1·09	1·19	0·74	1·23	0·61	0·68	1·52	0·51	1·27	0·93	0·67	0·50	133
Total non-Australian born	153·2	0·97	0·89	0·74	0·64	0·58	0·59	0·56	0·54	0·49	0·55	0·38	0·48	0·31	778
Australian-born	375·9	0·30	0·37	0·34	0·31	0·22	0·26	0·20	0·19	0·15	0·12	0·12	0·22	0·12	885

Table 9

WESTERN AUSTRALIA : TUBERCULOSIS INCIDENCE BY COUNTRY OF BIRTH, 1961–1973 : FEMALES

Country of Birth	Population at June 30, 1971 Thousands (Census)	Incidence per Thousand Persons													Total Notifications 1961–1973
		1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	
U.K. and Republic of Ireland	74·8	0·23	0·29	0·31	0·26	0·36	0·15	0·18	0·18	0·12	0·14	0·20	0·16	0·09	122
Germany	3·5	0·34	....	0·34	....	....	0·34	....	....	....	0·33	0·33	....	....	5
Greece	2·3	0·55	0·52	0·50	1·11	....	....	0·43	....	0·43	....	....	0·43	0·87	10
Italy	13·4	0·68	0·27	0·26	0·09	0·58	0·29	0·08	0·08	0·33	0·08	0·41	0·15	0·15	39
Netherlands	5·0	....	0·39	....	....	....	....	....	....	....	....	0·22	....	....	3
Poland	2·0	0·53	0·56	....	2·10	....	....	....	1·00	2·00	....	1·00	0·50	1·00	17
Yugoslavia	3·9	....	1·67	1·60	....	0·43	....	0·34	....	....	....	0·34	0·51	0·51	15
Other European	5·9	0·75	0·73	....	0·25	0·75	0·75	0·68	0·45	0·68	0·45	....	0·68	0·34	29
Other Birthplaces	19·3	0·45	0·29	0·14	0·45	0·15	0·15	0·20	0·82	0·51	0·61	1·33	0·47	0·36	61
Total non-Australian born	130·1	0·34	0·36	0·29	0·28	0·34	0·19	0·19	0·24	0·25	0·19	0·37	0·21	0·18	301
Australian-born	371·3	0·16	0·16	0·13	0·14	0·12	0·09	0·08	0·12	0·11	0·11	0·09	0·11	0·08	440

Table 10

PATIENTS FROM WHOM ATYPICAL MYCOBACTERIA WERE ISOLATED (FOR THE FIRST TIME) IN 1973

Type	Casual Isolations	Persistent Isolations			Total
		Atypical Tuberculosis			
		Pulm.	Non-Pulm.	Total	
M. kansasii	....	....	1	1	1
Scotochromogens	4	....	6	6	10
M. intracellulare	49	8	8	16	65
Rapid growers	8	....	1	1	9
Total Patients	61	8	16	24	85

Table 11

MYCOBACTERIAL DISEASE OF LYMPH NODES IN CHILDREN

Year	Scoto-chromogenic mycobacteria Identified	M. intra-cellulare Identified	M. TB (Human) Identified	Cultures Negative	Total Cases
1961	....	1	....	1	2
1962	3	2	....	2	7
1963	....	3	....	8	11
1964	....	3	1	4	8
1965	....	1	....	5	6
1966	2	6	....	7	15
1967	1	3	....	9	13
1968	2	9	....	5	16
1969	1	5	....	5	11
1970	3	2	....	5	10
1971	....	3	....	3	6
1972	3	7	....	5	15
1973	6	8	....	1	15
Total number of children	21	53	1	60	135

Table 12

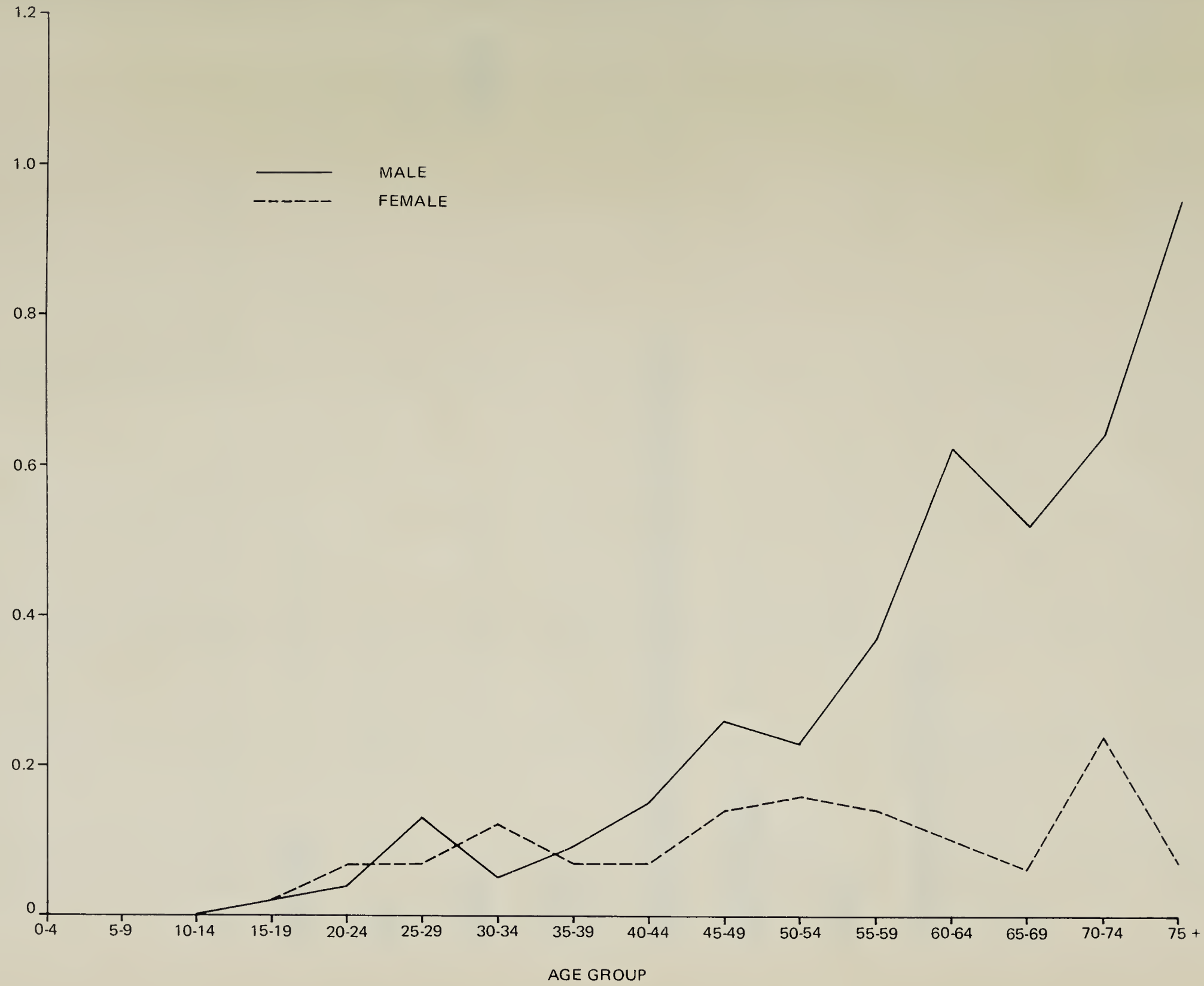
PATIENTS NOTIFIED WITH ATYPICAL TUBERCULOSIS
(including reactivations)

Year	M. kansasii		Scotochromogens				M. intracellulare				Rapid growers	
	Pulm.	Other	Pulm.	Lymph nodes	Other	Total	Pulm.	Lymph nodes	Other	Total	Pulm.	Lymph nodes
1955	....	....	....	....	....	....	1	....	....	1	....	....
1956	....	....	....	....	....	....	1	....	....	1	....	....
1957	....	....	....	....	....	....	1	....	....	1	....	....
1958	....	....	....	....	....	....	4	1	....	5	....	....
1959	....	....	....	....	....	....	10	2	....	12	....	....
1960	....	....	1	....	....	1	11	1	....	12	1	....
1961	....	....	2	....	....	2	11	1	....	12	....	....
1962	....	....	1	3	....	4	8	2	....	10	....	....
1963	....	....	3	....	....	3	17	3	....	20	....	....
1964	....	....	6	....	....	6	14	3	....	17	....	....
1965	2	....	2	....	....	2	13	1	....	14	....	....
1966	2	....	3	2	....	5	7	6	....	13	....	....
1967	1	....	4	1	....	5	6	3	....	9	....	....
1968	....	....	6	2	1	9	5	9	....	14	....	....
1969	1	....	....	1	....	1	10	5	....	15	....	....
1970	3	....	2	3	....	5	11	3	....	14	....	....
1971	....	....	1	....	....	1	5	3	....	8	....	....
1972	2	....	1	3	....	4	12	7	1	20	1	....
1973	....	1	....	6	....	6	8	8	....	16	....	1
Total	11	1	32	21	1	54	155	58	1	214	2	1

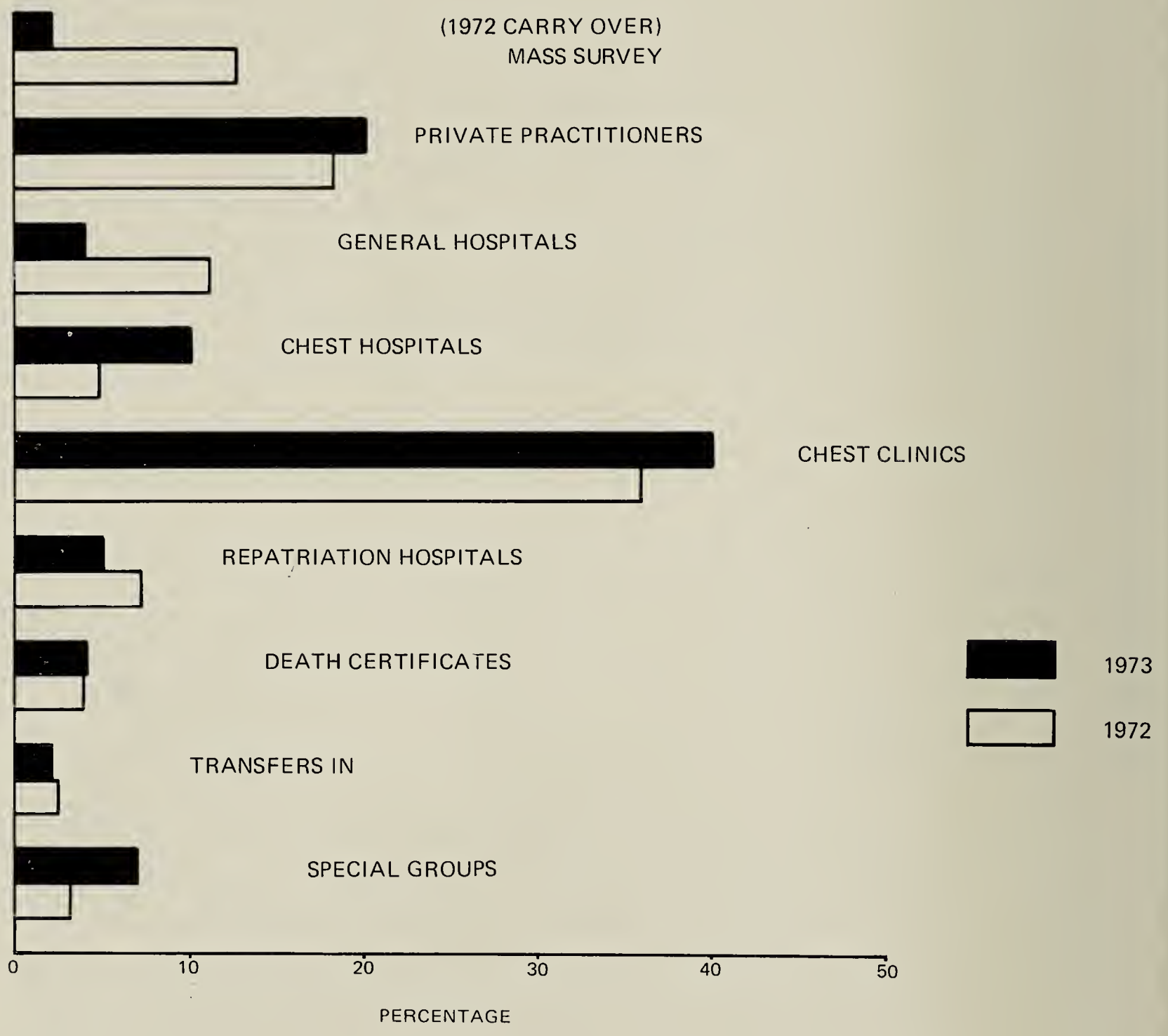
Plus : Two patients with mixed pulmonary disease, in 1963 and 1970.

GRAPH SHOWING THE INCIDENCE PER 1,000 IN AGE GROUPS

FOR PULMONARY TUBERCULOSIS IN 1973



GRAPH SHOWING THE SOURCE OF NOTIFICATION OF CASES OF PULMONARY TUBERCULOSIS AS A PERCENTAGE OF TOTAL NOTIFICATIONS



Western Australia

Pulmonary Tuberculosis

Year	Population in 1,000s	Notifications Received	Incidence Rate per 100,000 Population	Deaths Registered	Mortality Rate per 100,000 Population
1911	287	259	90·2	190	66·2
1912	301	429	142·5	220	73·1
1913	313	424	135·5	206	65·8
1914	323	353	109·3	229	70·9
1915	321	336	104·7	233	72·6
1916	313	511	163·5	225	71·9
1917	306	464	151·6	217	70·9
1918	308	432	140·5	245	79·5
1919	320	467	145·9	289	91·6
1920	330	442	139·9	259	78·4
1921	334	424	126·9	277	82·9
1922	341	387	113·8	256	75·1
1923	351	361	102·8	216	61·5
1924	363	381	104·6	228	62·8
1925	373	403	108·4	259	69·4
1926	381	415	108·2	252	66·1
1927	392	409	104·3	231	56·4
1928	408	395	96·8	282	69·1
1929	421	400	95·0	245	53·4
1930	429	569	132·6	218	50·8
1931	432	372	86·1	223	51·6
1932	435	339	77·9	203	46·7
1933	439	295	67·2	207	47·2
1934	442	287	64·9	218	49·3
1935	447	270	60·4	210	47·0
1936	452	338	74·8	193	42·7
1937	457	239	53·0	172	37·6
1938	464	247	53·2	177	38·1
1939	470	202	43·0	179	38·1
1940	473	231	48·8	181	38·3
1941	474	154	32·5	185	39·0
1942	477	113	23·7	175	36·7
1943	477	273	57·3	144	30·2
1944	481	219	45·4	134	27·9
1945	488	271	55·5	149	30·5
1946	493	343	69·6	163	33·1
1947	502	372	74·0	128	25·4
1948	515	325	63·1	157	30·5
1949	533	499	93·6	123	23·1
1950	558	586	104·8	129	23·1
DEATH CLASSIFICATIONS ACCORDING TO 6th (1948) INTERNATIONAL LIST					
1950	558	586	104·8	125	22·4
1951	580	467	80·4	76	13·1
1952	601	508	84·5	75	12·5
1953	621	378	60·6	43	6·9
1954	640	348	54·3	57	8·9
1955	659	413	62·7	31	4·7
1956	677	424	62·6	43	6·3
1957	692	332	47·9	36	5·2
1958	706	355	50·3	22	3·1
1959	726	320	44·1	24	3·3
1960	731	296	40·5	29	4·0
1961	737	209	28·4	18	2·4
1962	755	243	32·2	24	3·2
1963	773	216	27·9	13	1·7
1964	790	176	22·3	20	2·5
1965	806	153	19·0	12	1·5
1966	836	134	16·0	16	1·9
1967	877	137	15·6	9	1·0
1968	910	145	15·9	8	0·9
1969	947	133	14·0	8	0·8
1970	983	113	11·5	10	1·0
1971	1,029	113	11·0	17	1·6
1972	1,053	125	11·9	8	0·8
1973	1,068	110	10·3	11	1·0

Appendix IV

Epidemiology and Special Services

Dr. R. Allen, M.B., B.S., Senior Medical Officer

During 1973 significant increases occurred in the notification of three infectious diseases.

1. Salmonella—Notifications increased from 123 in 1972 to 311 in 1973—an increase of 153 per cent. All of this increase was caused by an explosive localised outbreak of the disease which was traced to certain products from a single small goods factory in the metropolitan area. The outbreak was terminated by strict supervisory public health measures after the suspect products had been withdrawn from sale at retail outlets.

2. Bacillary Dysentry—Notifications of this disease increased from 145 to 212—a 46 per cent. increase. It is worthy of note that of this total :—

   50.5 per cent. were notified from the far North and Kimberley Regions.

   26.8 per cent. from other country areas.

   22.7 per cent. from metropolitan districts.

3. Diphtheria—Five cases of diphtheria were notified during 1973, all of them from far off northern areas—once again highlighting the ever present risk of small localised outbreaks occurring among groups of poorly immunised persons in such regions.

During the year several regular immunisation clinics were conducted by this branch at metropolitan abattoirs and the University.

One facet of this Branch's activities that has shown a remarkable increase during the past twelve months is the answering of telephone enquiries from members of the public. Many hundreds of such enquiries are received each month from persons seeking information about all aspects of immunisation and infectious diseases. This, I feel, is a worthwhile and essential service to the public, but frequently proves very time-consuming.

IMMUNISATION BY SPECIAL SERVICES STAFF

Poliomyelitis

33 821 doses of Sabin Oral Poliomyclitis Vaccine were administered during 1973, making a total of 1 230 361 doses given by Departmental and Local Authority staffs since the Vaccine was introduced into Western Australia in 1967.

Of the 25 Local Health Authorities in the metropolitan area 20 conduct regular immunisation clinics for the benefit of residents in their areas. Sixteen also visit schools in their districts, administering booster immunisations to those children for whom parental consent has been obtained.

The accompanying table shows total treatments carried out during the past three years by those metropolitan Local Health Authorities that conduct regular clinics (except Mundaring which commenced in 1974).

It will be seen that Sabin Vaccinations have decreased by approximately one-third over this period. This is predictable as those adults who wish to receive this protection have mostly completed the full course of three doses. Hence each year the recently born infants comprise a greater proportion of Sabin Vaccinees.

In country districts there are few Local Health Authorities which conduct regular immunisation clinics or carry out school clinics. Most infants in these areas receive their initial course of Triple Antigen, but boosters become the responsibility of the parents, many of whom have by this time lost communication with Child Health Clinics.

Apart from the Sabin Vaccine, the figures given for vaccination injections in this report do not take into account those given by private medical practitioners.

Other Diseases

42 794 injections against diseases other than poliomyelitis were given during the year—a slight increase over the similar figure for 1972.

The number of measles vaccinations carried out during the year—4 635—was more than double the number for 1972. An extensive survey is planned during 1974 to follow up a large group of measles vaccinees in an attempt to determine the reaction rate following vaccination, and the efficiency of the vaccine.

7 722 first year high school girls received Rubella vaccination during the year, an acceptance rate of 78.6 per cent.

MALARIA

The nine notified cases of Malaria were followed up, six of these cases originated from New Guinea, two from Timor, and one from Ghana.

OTHER ACTIVITIES

Members of the Branch have attended several Medical Boards during the year, and taken part in Civil Emergency trials and discussions.

TRACHOMA

There was a further slight decrease in trachoma activity in 1973, and the overall total percentage of active cases found—27.2 per cent.—is the lowest recorded since the trachoma control programme was commenced. In 1974 it is expected that the administration of trachoma control will pass to Community Health Services whose field Staff are in continual close liaison with the sufferers from this disease.

IMMUNISATIONS ADMINISTERED BY LOCAL HEALTH AUTHORITIES 1971–1973

Local Health Authority	1971			1972			1973		
	Sabin	Injts	Total	Sabin	Injts	Total	Sabin	Injts	Total
Armadale-Kelmscott	3 930	1 588	5 518	1 740	1 460	3 200	1 486	1 692	3 178
Bassendean	736	1 080	1 816	1 156	858	2 014	724	792	1 516
Belmont	1 942	3 585	5 527	1 798	2 272	4 070	2 311	2 233	4 544
Canning	2 263	4 043	6 306	2 129	3 522	5 651	1 657	3 687	5 344
Cockburn	2 237	1 500	3 737	1 736	1 914	3 650	1 593	1 853	3 446
Cottesloe	403	300	703	276	307	583	294	303	597
Fremantle	3 823	3 643	7 466	2 583	3 138	5 721	2 139	2 957	5 096
Gosnells	1 381	1 757	3 138	1 454	1 974	3 428	1 677	2 049	3 726
Kalamunda	512	405	917	590	503	1 093	510	532	1 042
Kwinana	1 089	1 369	2 458	971	1 444	2 415	887	1 390	2 277
Melville	1 846	1 513	3 359	1 709	4 541	6 250	1 303	6 303	7 606
Mosman Park	456	330	786	283	229	512	173	211	384
Nedlands	668	734	1 402	487	638	1 125	258	398	656
Perth City	15 275	11 749	27 024	16 764	14 956	31 720	8 331	10 171	18 502
Rockingham	842	1 429	2 271	767	1 801	2 568	744	1 591	2 335
South Perth	1 789	1 875	3 664	982	1 579	2 561	441	1 253	1 694
Stirling	10 941	18 236	29 177	9 879	15 033	24 912	7 823	14 649	22 472
Swan	782	958	1 740	797	970	1 767	947	1 168	2 115
Wanneroo	185	733	918	695	1 289	1 984	719	1 956	2 675
	51 100	56 827	107 927	46 796	58 428	105 224	34 017	55 188	89 205

TRACHOMA ACTIVITY 1973

Area	0–4 Years			5–9 Years			10–14 Years			Over 15 Years			Total		
	Ex.	Act.	% Act.	Ex.	Act.	% Act.	Ex.	Act.	% Act.	Ex.	Act.	% Act.	Ex.	Act.	% Act.
Eastern Goldfields	120	48	40·0	207	74	35·7	159	30	18·9	9	....	....	495	152	30·7
Murchison	155	48	31·0	303	86	28·4	165	50	30·3	6	....	....	629	184	29·3
Lower Great Southern	106	33	31·1	210	36	17·1	115	11	9·6	....	....	....	431	80	18·6
Upper Great Southern	50	18	36·0	181	57	31·5	86	19	22·1	....	....	....	317	94	29·7
Total	431	147	34·1	901	253	28·1	525	110	21·0	15	....	....	1 872	510	27·2

TRACHOMA ACTIVITY, 1962–73

Year	0–4 Years			5–9 Years			10–14 Years			Over 15 Years			Total		
	Ex.	Act.	% Act.	Ex.	Act.	% Act.	Ex.	Act.	% Act.	Ex.	Act.	% Act.	Ex.	Act.	% Act.
1962	1 422	1 159	81·5	1 728	1 194	69·1	1 209	457	37·8	845	146	17·3	5 204	2 956	56·8
1963	718	493	68·7	679	405	59·6	414	114	27·5	192	15	7·8	2,003	1,027	51·3
1964	843	542	64·3	878	471	53·6	674	114	21·4	589	15	2·5	2,983	1,172	39·3
1965	1,073	675	62·9	1,199	534	44·5	869	122	14·0	113	1	0·9	3,254	1,332	40·9
1966	922	550	59.7	1,088	405	37·2	785	134	17·1	219	3	1·4	3,014	1,092	36·2
1967	372	205	55·1	465	138	29·7	295	28	9·5	28	....	....	1,160	371	32·0
1968	467	248	53·1	633	287	45·3	536	160	29·9	143	12	8·4	1,779	707	39·7
1969	843	387	45·9	956	247	25·8	662	55	8·3	48	....	....	2,509	689	27·5
1970	798	397	49·7	1,065	338	31·7	705	93	13·2	160	2	1·3	2,728	830	30·4
1971	766	413	53·9	1,234	489	39·6	691	126	18·2	183	4	2·2	2,874	1,032	35·9
1972	549	243	44·3	962	317	33·0	527	88	16·7	1	....	....	2,039	648	31·8
1973	431	147	34·1	901	253	28·1	525	110	21·0	15	....	....	1 872	510	27·2

Appendix V

Venereal Disease Control Branch

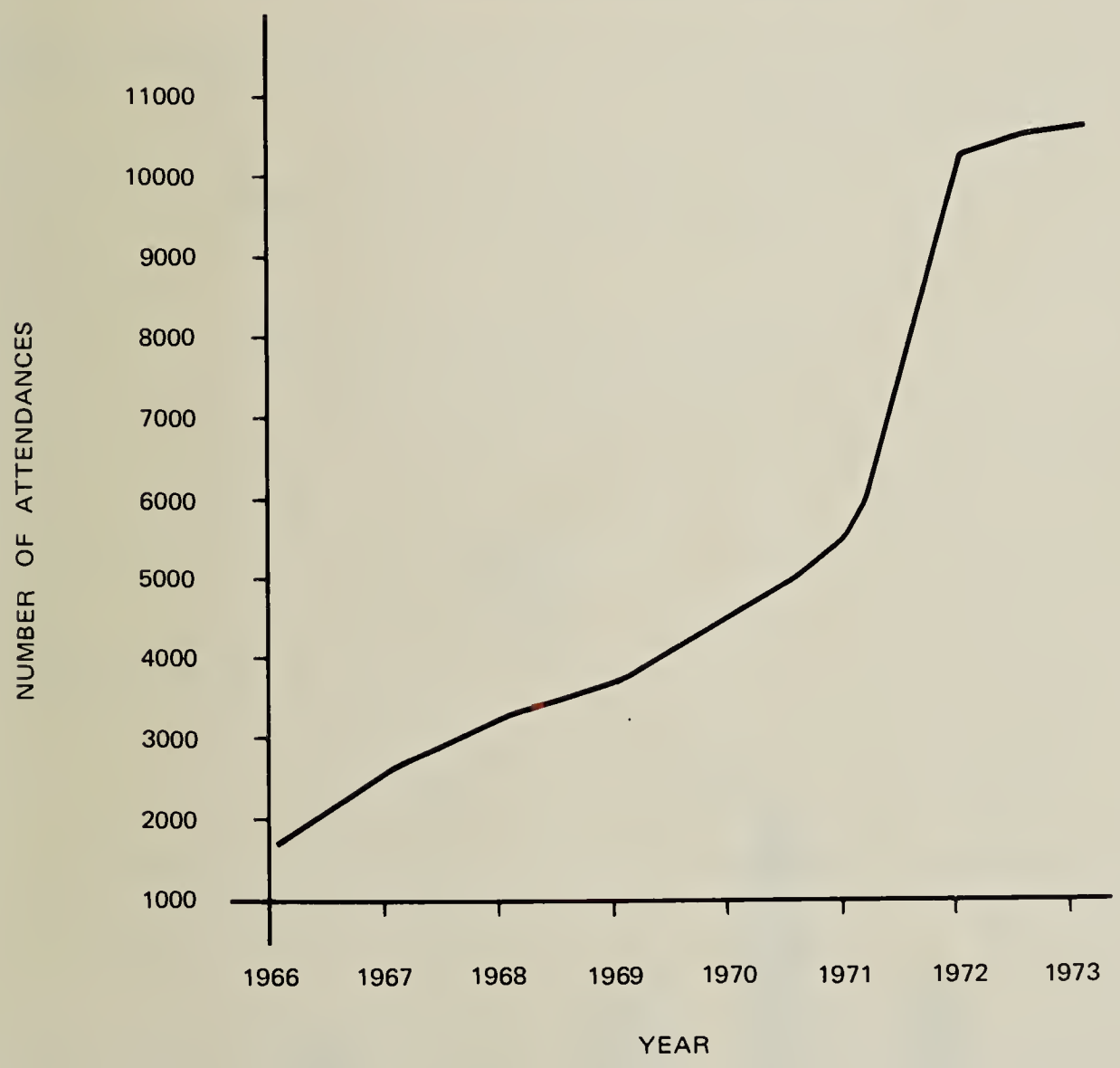
W. A. Newnham M.B., B.S. Venereologist-in-charge

The combined venture between the Royal Perth Hospital and the Department of Public Health in establishing and re-organising the Clinic for Venereal Diseases at 69 Moore Street, Perth, statistically has proved to be successful. Graph 1 showing the total attendances at the Clinic for Venereal Diseases from 1966 to 1973 inclusive illustrates this fact. The Clinic was reconstituted in November, 1971.

ATTENDANCES AT V.D. CLINIC

1966–1973

(CLINIC RECONSTITUTED, 8/11/1971)



The staff now comprises two full time medical officers and one part time medical officer, two health officers, one health assistant, one clinic attendant, two sisters and one typist/receptionist. In addition, a branch of the State Health Laboratory was established at the Clinic in November, 1973, staffed by a senior technologist, Mr. P. Fogarty, who does all the laboratory work connected with the Clinic except serology and viral studies.

(4)—43996

ontact Tracing

Contact tracing has continued and the proportion of male to female patients has remained static according to the following table.

The number of new patients has increased by 21.7 per cent. for the year 1973 over 1972.

Year	Total patients attending the clinic	New male patients	New female patients	Total of new patients	Proportion male—female patients
1971	5 760	799	235	1 034	3·4 : 1
1972	10 786	1 615	597	2 212	2·7 : 1
1973....	10 879	1 922	770	2 692	2·7 : 1

The rate 2.7 males to 1 female remained static for both 1972 and 1973. In order to try to reduce this ratio an establishment has been created for another male staff member to be appointed as a contact tracer. It is anticipated that this appointment will reduce the work load on the present contact tracing staff.

It is hoped also to provide a room in the female Clinic for this important function to be conducted for females. There is at present no area where female contact tracing can be enquired into in a confidential manner.

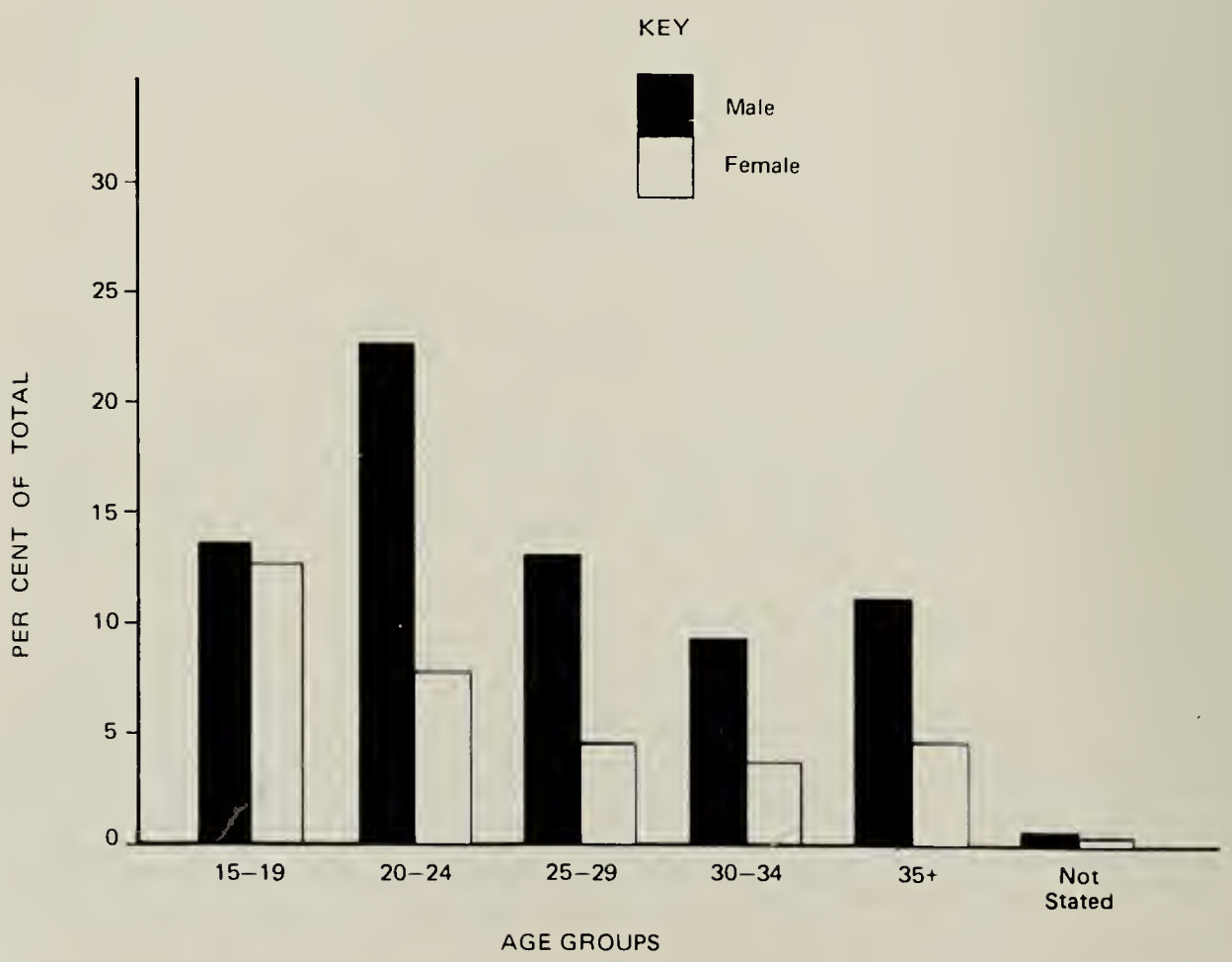
The age and sex-specific percentage of Venereal Disease Notification, Western Australia 1973, is presented in Graph 2.

AGE AND SEX SPECIFIC PERCENTAGES

OF

VENEREAL DISEASE NOTIFICATIONS

WESTERN AUSTRALIA, 1973



This illustrates that the greatest percentage of females who contract venereal disease is still the 15–19 year age group and in males the 20–24 year age group. This is consistent with figures from previous years, and related to those from some other parts of the world.

The graph Venereal Disease Notifications, Western Australia 1961–1973 per 100 000 head of population, in the various age groups is shown in graph form, broken down into female and male sections. (Graph 3.)

The key applies to both graphs. In all, the graphs show a marked increase in all age groups over the 12 years, the least increase being in the age group 40 plus, particularly in the female sector.

Fremantle Hospital Clinic

The Clinic conducted in the Outpatients Department of the Fremantle Hospital continued throughout 1973.

A male clinic is conducted on each Monday from 5.00 p.m.–6.00 p.m. and a female clinic on each Wednesday from 4.00 p.m.–6.00 p.m.

Male	Female	Total Attendances
333	196	529

New Male	New Female	Total New Patients
114	51	165

Notifications

	Male	Female	Total
N. Gon.	55	27	82
Syphilis	2	6	8

The co-operation of the Medical Superintendent, Dr. G. A. Leyland, and the Senior Casualty Medical Officer, Dr. K. Murphy, is noted.

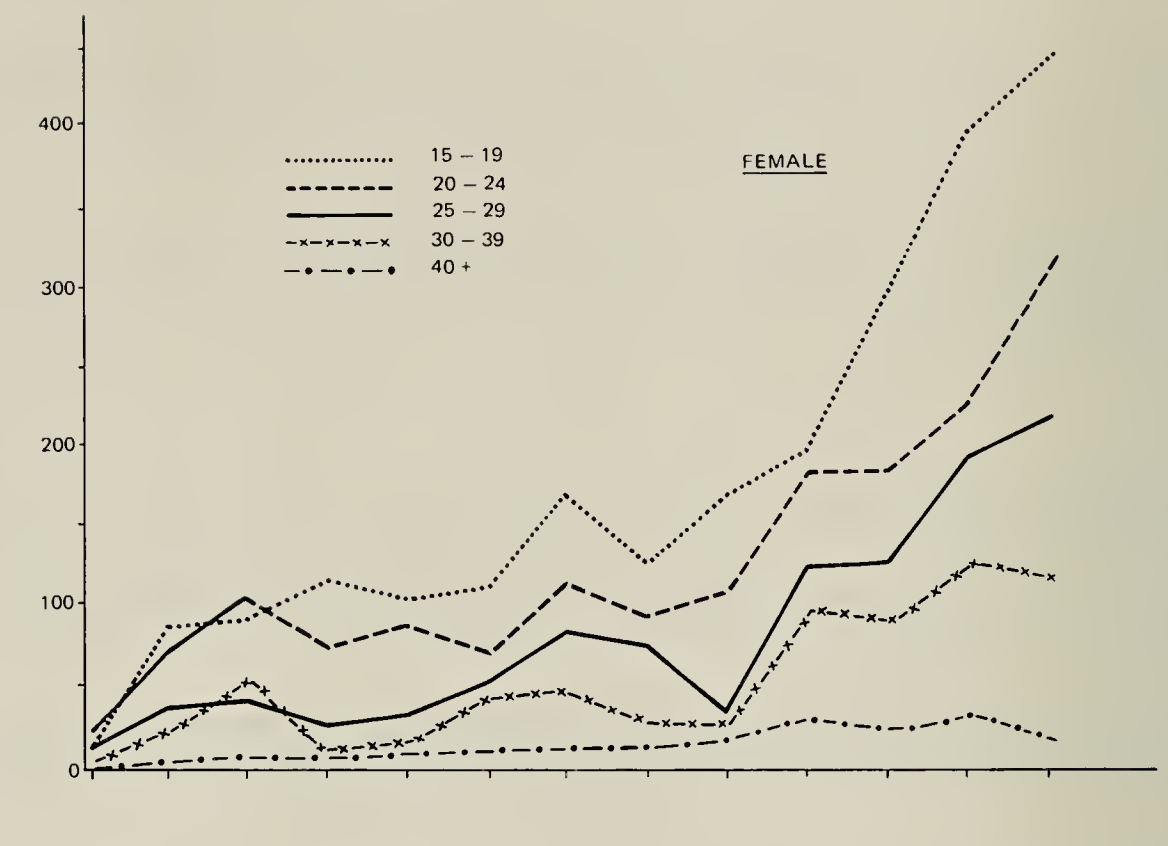
Research

The study of applicable virus infections related to venereal disease, mostly in the fields of Chlamydia and Herpes Simplex Type II has continued.

GRAPH 3

VENEREAL DISEASE NOTIFICATIONS

AGE AND SEX SPECIFIC RATES PER 100,000 POPULATION
WESTERN AUSTRALIA 1961-73



VIRUS ISOLATIONS

Sex	No. Examined	Chlamydia (Tric)		Herpes Virus	
		No.	%	No.	%
Female	592	117	19·8	26	4·4
Male	152	10	6·6	4	2·7
Total	744	127	17·1	30	4·1

Chlamydia (Tric) could be the causative agent in some cases of non-specific urethritis and Herpes Virus Type II has a possible association with carcinoma of the cervix.

The help and co-operation of Dr. Mackay-Scollay, Microbiologist of the State Health Laboratories has made the above possible.

New Female Clinic

The number of clinics has been extended due to the incorporation of a new building which was completed in September, 1973. This enables the Clinic to conduct male and female clinics in their separate sections, all day for the five working days of each week.

Quinquennial Venereal Disease Notification Rates

The State Quinquennial average for venereal disease for the year ending 1973, was 144 per 100 000 population. In Map 1 quinquennial venereal disease notification rates per 100 000 population illustrates the situation in the various statistical divisions.

Contact with Medical Practitioners

A trip from Perth to Wyndham was carried out in July, 1973 by the Venereologist in Charge. The coastal towns were visited and venereal disease discussions conducted with almost all doctors in these areas. As a result of these discussions, Sister Lynas, a Field Officer attached to the Clinic, carried out, in association with, and under the direction of the local Community Health Medical Officer in each area, a pilot study into Treponemal Serology.

A total of 1 423 blood tests were taken, being—

Carnarvon area	424
Port Hedland Area	314
Onslow area	94
Roebourne area	192
Broome area	217
Derby area	182

The blood tests were performed in the State Health Laboratories at the Perth Medical Centre.

During the pilot study which lasted $3\frac{1}{2}$ weeks, Sister Lynas and the local community health medical officers, not only took blood in various localities but showed a film " V.D. every 30 seconds ". Lectures were given to Matron and staff of several hospitals and various local groups from Carnarvon to Derby.

The co-operation and organisation carried out by Dr. J. Williams of Carnarvon, Dr. P. Toom of Roebourne, Dr. F. Quadros of Port Hedland and Dr. R. Spargo of Derby, in making these pilot studies possible, was gratefully accepted. Without them the pilot study would not have been the success it was.

The results indicate that there will eventually have to be a study with consideration of epidemiological factors, diagnosis, treatment and energetic contact tracing.

The co-operation and interest of the Public Health Nurses in the various situations throughout the State is gratefully recorded as is that of the Director of Community Health, Dr. Lawson Holman.

A pilot survey conducted in the Roebourne area into Treponemal activity was successfull due to the energetic application to the survey of the medical officer, Dr. Peter Toom.

The patients included those who attended the hospital outpatients department and those in outlying areas seen by the Public Health Nurses under the direction of the medical officer. Blood was taken for serological examination on as many occasions as was feasible and possible.

Lectures and Talks

During the year 1973 lectures were given through the University Department of Medicine to fourth year medical students over a period of three half days. Also lectures were given at the School of Nursing of Royal Perth Hospital and to the Public Health Nurses in their Diploma of Public Health Nursing course. In addition lectures and presentation of facts regarding venereal disease were given to a large number of people including school children, Matrons and staff of several country hospitals, para-medical groups, sporting and political clubs and similar organisations.

Appreciation is extended to the Emeritus Professor of Pathology, Dr. R. Ten Seldam for his lecture on V.D. Pathology and to Dr. M. Sadka for her lecture on neurosyphilis.

Publicity through the media of newspapers, radio and television has been marked in 1973.

Lectures were given by the Venereologist-in-Charge to various medical, paramedical and lay groups, in various centres in the State.

Health Education

During the year 1973 Mr. Colm O'Docherty was appointed by the Health Education Council as a health educator in venereal diseases. Health Education is seen to play an important part in the control programme for the sexually transmitted diseases. Even so, it would seem that Mr. O'Docherty will be unable to encompass all the Health Education required of him in this State, particularly in relation to school programmes, so inevitably he will require more staff to make the programme viable.

Relevant statistics for 1973 are presented herewith together with comparable records for the previous decade.

In conclusion, it is apparent that the sexually transmitted group of diseases still represents a major problem to both the individual and the Public Health Department.

I would like to thank the staff of the Special Treatment Clinic for their co-operation and diligence in this difficult and delicate area of public health, during the year 1973.

VENEREAL DISEASE NOTIFICATIONS

RATE PER 100,000 PERSONS

WESTERN AUSTRALIA 1961-1973

VENEREAL DISEASE—W.A.

1964–1973

Year	Gonorrhoea	Syphilis	Granuloma	Chancroid	Total Venereal Disease
1964	392	11	....	....	403
1965	453	9	....	....	462
1966	690	20	....	....	710
1967	796	41	....	2	839
1968	718	60	1	....	779
1969	817	209	....	2	1 028
1970	1 166	159	3	....	1 328
1971	1 236	254	2	1	1 493
1972	1 467	258	2	1	1 728
1973	1 657	290	2	3	1 952

MAP 1

QUINQUENNIAL VENEREAL DISEASE NOTIFICATION RATES PER 100,000 POPULATION BY STATISTICAL DIVISION 1968 – 1973

TOTAL STATE: 144

VENEREAL DISEASE—W.A. 1964–1973

AGE DISTRIBUTION

Year	15–19 Years	20–24 Years	25–29 Years	30–34 Years	Over 35 Years	Age Not Stated
	%	%	%	%	%	%
1964	25·31	29·03	15·88	8·68	18·11	2·98
1965	22·94	29·87	17·53	9·74	16·88	3·03
1966	19·72	31·13	17·61	10·99	15·49	5·07
1967	23·84	25·27	16·21	11·68	19·90	3·10
1968	21·31	31·19	15·28	9·11	19·38	3·72
1969	20·33	26·95	17·12	12·55	20·82	2·24
1970	19·02	28·83	19·40	12·45	19·02	1·28
1971	23·91	29·74	18·02	10·78	17·34	·20
1972	25·46	26·85	17·93	10·93	18·75	·05
1973	27·35	28·68	18·23	10·75	14·65	·31

VENEREAL DISEASE—W.A., 1964–1973

AGE AND SEX DISTRIBUTION

A. MALES

Year	15–19 Years	20–24 Years	25–29 Years	30–34 Years	Over 35 Years	Age Not Stated	Total
1964	70	98	57	33	63	12	333
1965	73	118	73	44	62	13	383
1966	101	205	113	67	96	33	615
1967	138	184	115	84	152	23	696
1968	112	215	107	59	137	24	654
1969	132	243	161	121	181	20	858
1970	163	321	219	140	192	11	1 046
1971	207	357	221	132	194	3	1 114
1972	223	365	234	142	235	1	1 200
1973	285	422	271	160	230	5	1 373

B. FEMALES

Year	15–19 Years	20–24 Years	25–29 Years	30–34 Years	Over 35 Years	Age Not Stated	Total
1964	32	19	7	2	10	....	70
1965	33	20	8	1	16	1	79
1966	39	16	12	11	14	3	95
1967	62	28	21	14	15	3	143
1968	54	28	12	12	14	5	125
1969	77	34	15	8	33	3	170
1970	89	61	38	25	60	6	279
1971	150	87	48	29	65	....	379
1972	217	99	76	47	89	....	528
1973	249	138	85	50	56	1	579

VENEREAL DISEASE—W.A., 1969–1973

SEX DISTRIBUTION

Disease	Male					Female					Total				
	1969	1970	1971	1972	1973	1969	1970	1971	1972	1973	1969	1970	1971	1972	1973
Syphilis—															
Primary	140	77	119	106	133	35	54	72	106	71	175	131	191	212	204
Secondary	20	14	25	17	32	11	9	25	19	43	31	23	50	36	75
Tertiary	....	....	5	2	2	1	3	6	5	4	1	3	11	7	6
Congenital	2	1	1	2	4	....	1	1	1	1	2	2	2	3	5
Total Syphilis	162	92	150	127	171	47	67	104	131	119	209	159	254	258	290
Gonorrhoea	695	954	956	1 069	1 199	122	212	280	398	458	817	1 166	1 236	1 467	1 657
Granuloma	....	2	2	2	2	....	1	....	....	....	....	3	2	2	2
Chancroid	1	....	1	1	1	1	....	....	....	2	2	....	1	1	3
Total Venereal Disease	858	1 048	1 109	1 199	1 373	170	280	384	529	579	1 028	1 328	1 493	1 728	1 952

Appendix VI

Community Health Services

Lawson J. Holman, J.P., M.B., B.S., F.R.C.S.E., D.P.H., F.A.C.M.A.,
Director

Targets 1973

Targets were set in the following categories in 1973 :—

1. Basic nutrition.
2. Health Education.
3. Immunisation.
4. Control of endemic diseases.
5. Treatment of minor illness, trauma and infections.
6. Prevention of dependency.
7. Certain case finding.
8. Family spacing.
9. Maternal care.
10. Sight, hearing and limb conservation.
11. Pensioner health.
12. School medical examinations.
13. Liaison.
14. Records.
15. Research.
16. Training.
17. Dental Health.
18. Medical audit of target population.

Work done in relation to Targets

NUTRITION

There was a slight overall rise in the nutritional standard of clientele in 1973. In spite of intensive efforts by field staff, gains in some areas of nutrition were counterbalanced by the effects of increased alcohol intake which is presently considered by field staff to be the most pressing hazard to the health of the clientele.

Cases of malnutrition were found by Community Health Services staff as follows :—

Table 1

Region	Malnutrition	Marasmus	Kwashiorkor
Kimberley	115	11	0
Pilbara	....	0	1
Northwest	7	0	0
Goldfields	1+	....	....
Southwest....	265	0	0
Metropolitan	64	0	0
	452+	11	1

Kimberley Nutritional Anthropometric Survey

Children 0–5 years.

In 1973 an anthropometric survey was conducted in the Kimberley by Regional Medical Officer, Dr. R. M. Spargo. The results are grouped by age and place of residence in 1973 :— Town, Mission, Station, Independent Community. Results are shown on Tables 2, 3 and 4.

Table 3

BIRTH WEIGHT—AVERAGE OF SAMPLES IN GRAMMES BY AGE AND RESIDENCE

Residence	Age in Years				
	0–1	–2	–3	–4	–5
Town	3 137	3 180	3 070	3 170	3 024
Mission	3 090	3 006	3 077	3 073	3 890
Station	2 985	3 013	3 207	2 806	3 020
Community	3 197	2 910	3 099	2 706	2 912

Table 4

BIRTH WEIGHT—AVERAGE OF SAMPLES IN GRAMMES BY AGE AND SAMPLE SIZE

Age–Years	Sample Number	Average birth weight in gms
0–1	203	3 083
–2	166	3 086
–3	166	3 098
–4	116	3 050
–5	104	2 986

Table 2

ARM CIRCUMFERENCE/AGE

Age (yrs.)	TOWNS % of persons				MISSIONS % of persons				STATIONS % of persons				COMMUNITIES % of persons				KIMBERLEY % of persons			
	No.	Std. or Better	91–99% of Std.	Below 91% of Std.	No.	Std. or Better	91–99% of Std.	Below 91% of Std.	No.	Std. or Better	91–99% of Std.	Below 91% of Std.	No.	Std. or Better	91–99% of Std.	Below 91% of Std.	No.	Std. or Better	91–99% of Std.	Below 91% of Std.
1	25	40	24	36	13	31	31	38	15	27	53	20	15	27	47	26	68	32	36	32
2	20	45	30	25	14	21	43	36	8	0	75	25	13	15	46	39	55	25	44	31
3	20	35	60	5	18	22	28	50	8	25	38	37	12	17	67	16	58	26	48	26
4	13	46	59	0	11	18	46	36	10	0	60	40	9	33	44	23	43	26	51	23
5	14	7	72	21	10	0	70	30	10	0	40	60	10	10	20	70	44	2	34	64
Total No.	92	33	41	18	66	13	27	26	51	6	27	18	59	12	27	20	268	63	113	92
Total %	100	36	44	20	100	20	41	39	100	12	53	35	100	20	46	34	100	24	42	34

Table 2

WEIGHT/AGE

Age (yrs.)	TOWNS % of persons				MISSIONS % of persons				STATIONS % of persons				COMMUNITIES % of persons				KIMBERLEY % of persons			
	No.	Std. or Better	91–99% of Std.	Below 91% of Std.	No.	Std. or Better	91–99% of Std.	Below 91% of Std.	No.	Std. or Better	91–99% of Std.	Below 91% of Std.	No.	Std. or Better	91–99% of Std.	Below 91% of Std.	No.	Std. or Better	91–99% of Std.	Below 91% of Std.
1	25	24	28	48	13	54	15	51	15	20	47	33	15	33	7	60	68	31	25	44
2	20	20	15	65	14	14	27	59	8	0	25	75	13	15	8	77	55	15	18	67
3	20	25	25	50	18	33	11	56	8	0	38	62	12	25	50	25	58	22	26	52
4	13	8	46	46	11	27	27	46	10	0	0	100	9	33	22	45	43	16	26	58
5	14	7	14	79	10	20	10	70	10	10	20	70	10	10	0	90	44	11	11	7[a]
Total No.	92	17	23	52	66	20	12	34	51	4	14	33	59	14	10	35	268	54	58	156
Total %	100	18	26	55	100	30	18	52	100	8	28	64	100	24	17	59	100	20	22	58

It should be noted that in The Kimberley in children 4–5 years of age only 2 per cent. reach the standard ratio of arm circumference for age and 11 per cent. weight for age, whereas, in children 0–1 years old, 32 per cent. have standard arm circumference for age and 31 per cent. standard weight for age. Similar results were found in other parameters tested, i.e., length/age ; weight/length : triceps skinfold. There is an overall indication that nutrition today is improved compared to that of five years ago.

The figures also indicate that nutrition is better in towns and missions and that station nutrition is least satisfactory where only 6 per cent. and 8 per cent. of the samples of all ages 0–5 years reached standard parameters.

HEALTH EDUCATION

Health education continued to be a major portion of field staff activity in 1973. Every contact with clientele was turned into an educational situation. Group concensus and client demonstration methods used in 1972 were enlarged and broadened.

The following areas remain with more than 10 per cent. of the target population totally ignorant of simple hygiene : Hall's Creek, Derby, Carnarvon, Roebourne, Port Hedland and Goldfields.

Staff report generally that, where the target population possesses a knowledge of hygiene, there remains a reluctance to practice it, especially where living conditions are not conducive to improvement of health standards. There was an overall improvement in hygiene by the target population in 1973.

IMMUNISATION

The intensive campaign commenced in 1972 was continued. The following figures show vaccinations given or promoted by Community Health Services staff in 1973 with the number of cases and deaths reported among the target population :—

Table 5

Vaccine against	Vaccinations	Cases	Deaths
North of 26th parallel			
Tetanus	8 960	0	0
Diphtheria	7 724	7	1
Whooping Cough	3366	0	0
Measles	910	148	0
Poliomyelitis	6 224	0	0
T.B. & Leprosy	741	TB 6 L 8	0
Smallpox	154	0	0
Rubella	696	4	0
Influenza	2 075	Epidemics at Derby. Fitzroy Cr. Jigalong	4
Hepatitis (Gamma Globulin)	96	....	0
Total	30 946	....	5
South of 26th parallel			
Tetanus	2 304	0	0
Diphtheria	2 364	0	0
Whooping Cough	1 944	5	0
Measles	108	177	1 (associated)
Poliomyelitis	2 197	0	0
T.B.	5	5	0
Smallpox	3	0	0
Rubella	26	23	0
Influenza	177	....	1
Total	9 128	....	2
State Total	40 074	....	7

Diphtheria outbreak—Northwest Region

Taken from the report of Regional Medical Officer, Dr. John Williams.

On 18th January, 1973, a ten months old infant was admitted to Carnarvon District Hospital in a moribund state and subsequently died. A diagnosis of diphtheria was confirmed. On the same day Community Health Services field staff arranged isolation of families and the swabbing of all contacts. The patient had been resident on an isolated sheep station some 70 miles from Carnarvon.

The station was immediately visited and measures taken to prevent the spread of infection. It was found that a shearing team had recently been to the station. Investigations proved there had been no contact with the patient. On 20th January the family was visited again on the sheep station and a sibling of the deceased infant was found to have purulent tonsillitis and cervical adenitis which proved to be diphtheria. It was also found that the mother and another sibling were carriers.

Supervision of isolated families and throat swabbing of secondary contacts in Carnarvon was continued. A link was established with Onslow and on 23rd January the Community Health Services team flew to Onslow where the staff of the Community Welfare Department produced a very complete list of contacts and arranged for them to present for examination and swabbing by the Community Health Services team. Concurrent prophylactic injections were given to as many as possible. The hospital staffs at Carnarvon and Onslow were also swabbed and encouraged to have booster injections. On 26th January an augmented monthly immunisation clinic was held in Carnarvon.

On 28th January one of the swabs from Onslow was returned positive. The child concerned was clinically well. The father of this child was a truck driver on frequent runs to Carnarvon but no link could be established with the station cases.

On 2nd February a further positive result was returned. Again the patient was not clinically ill but did complain of a sore throat.

On 3rd February the intense immunisation campaign was extended to Barrow Island in view of the recent evacuation of the inhabitants to Onslow because of a cyclone. Most of the men on the island presented themselves for booster injections.

On 8th February another positive swab was notified. The patient was a clinically well schoolboy who had presented with a sore throat on the 6th February. The family was isolated and swabbed.

Following this no further positive swabs were found. All cases were treated with Penicillin and Erythromycin in full dosages for at least 120 hours.

In all, 57 persons were Schick tested and 270 swabs taken. Primary contacts were isolated in their own homes and the greatest co-operation was received from these people.

The Shire Council Health Surveyor and the officers of the Community Welfare Department were kept informed of the situation throughout and assisted greatly in both procedure and the supply of food to anyone in need.

We know definitely that the fatal case had not received any immunisation injections due to the mother returning to the station in the early puerperium and having no opportunity to return to Carnarvon. The family as a whole was well covered by immunisation and was not neglected or deprived in any way.

SUMMARY

Table 6

Cases	Patient	Age	Sex	Disease	Immune Status
1	Infant	10 months	M	Laryngeal Diphtheria	Nil (died)
2	Child	5 years	F	Pharyngeal Diphtheria	Satisfactory
3	Child	4 years	M	Carrier	Satisfactory
4	Adult	26 years	F	Carrier	No record or recollection
5	Child	5 years	F	Carrier	No record or recollection
6	Child	15 years	F	Atypical Diphtheria	No record
7	Child	12 years	M	Atypical Diphtheria	No record but mother adamant he had full status.

Prompt action by Community Health Services staff with liaison and co-operation of other agencies doubtless prevented a more serious outbreak of diphtheria. The death of the unprotected infant stresses the importance of prophylaxis and also perhaps the lack of awareness of this importance. The public for some time have not seen diphtheria and have become somewhat complacent regarding its serious nature.

ENDEMIC DISEASES

Leprosy—Hansen's Disease

The intensive campaign against Hansen's Disease in Western Australia continued in 1973.

The statistics below show that the incidence of new cases in the State generally has been reduced to a minimum. The endemic continues in the Kimberley and there is a focus of activity in the Pilbara. The incidence among immigrants in the Metropolitan area should be noted.

Prognosis

The prognosis for new cases of Hansen's Disease is improved greatly. Several factors contribute to this :—

1. New cases are detected at an earlier stage than previously.

2. The time taken for a patient to achieve a zero bacterial index after admission has been reduced by combined drug therapy regimes.

3. The period of residence within an institution following negativity has been shortened because of the improved surveillance control due in turn to the increased number of Community Health doctors and nurses in the field capable of maintaining surveillance at a high standard.

4. The advent of the long acting drug Hansolar (DADDS) has significantly lowered the time of residence necessary before discharge to surveillance.

Control Measures

Control measures are now as follows :—

1. Early detection and isolation of infective cases. In the far North, the total population at risk is surveyed annually.

   It is significant that the majority of bacilliferous cases admitted to the Leprosarium in 1973 were discovered and referred by Public Health Field Nurses.

2. Adequate treatment of discovered cases aimed both at eradication of the causative organism and the prevention or correction of incipient deformities. There is a marked reduction in the complications of Leprosy which formerly led to mutilation and deformity.

3. Special attention and surveillance of direct descent relations of index cases.

4. Increased control of patients discharged to surveillance.

5. B.C.G. vaccination of the newborn and others at risk.

6. Empirical prophylactic treatment of individuals presenting with certain clinical signs and symptoms. In 1973 there was a marked fall in the number of these people, especially children.

7. Health education of staff, patients and the public.

8. Notification of cases is required under the Health Act.

Statistics

Inpatients, Derby Leprosarium 31.12.73	77
Admissions Derby Leprosarium 1973—	
Positive Cases	
New	4
Relapsed	6
Negative Cases	
New	0
Relapsed	1
Short term admissions for trophic ulceration only	7
Discharges Derby Leprosarium 1973—	
Discharged to Surveillance	25
Transferred to East Arm Settlement	1
Deaths	2
Abscondees	1
(Another patient absconded but returned to the Leprosarium and was later discharged to surveillance and is included in those figures.)	
Births in Leprosarium	2

Notifications of new cases of Hansen's Disease in 1973—

From the Derby Leprosarium	4
From the E Register	8
Metropolitan migrants	1
	13

Graph 1 shows the number of inpatients in the Derby Leprosarium by year and Graph 2 shows Hansen's Disease notifications in W.A. by year.

Public Health Field Nurses provided an extensive service for patients with Hansen's Disease and undertook a great deal of surveillance work in the continued effort to eradicate the disease from Western Australia.

Work done by the nurses and their assistants was :—

1. A constant search for suspicious lesions.
2. The supervision of lesions found.
3. Regular medical checks of all persons taking treatment.
4. The distribution of drugs for treatment.
5. The supervision of treatment to patients in prison.
6. The special supervision (daily) of some patients on treatment requiring extra care.
7. Daily dressings to injuries, ulcers and burns.
8. Regular monitoring of patient's blood pressure, urinalysis, haemoglobin and general health.
9. Organisation of surveys.
10. Organisation of medical examination of persons receiving secondary school grants.
11. Teaching and advice regarding Hansen's Disease to hospital staff, Community Welfare Department staff, teachers and police, etc.
12. Administration of B.C.G's and Mantoux tests.
13. Keeping records.
14. Provision of equipment and facilities for smears and biopsies.

In 1973 the Community Health Services nursing staff screened 2 959 persons for Hansen's Disease and referred 147 of these to a medical officer for expert opinion. Supervision of treatment was maintained for 318 patients. In addition, Community Health Services medical officers screened over 8 000 persons for Hansen's Disease in 1973.

HANSEN'S DISEASE -- Graph to show numbers of inmates of the Derby Leprosarium by year.

GRAPH 1

HANSEN'S DISEASE – Graph to show Hansen's Desease.

Infectious Disease Notifications by year in the State of Western Australia

GRAPH 2

Yaws

Only 12 new cases of yaws were reported by Community Health Services staff in 1973. Many cases of positive serology were found in aged adults. Clinically they were considered old cases. The difficulty of distinguishing yaws from endemic syphilis remains a problem. All cases received treatment.

Yaws has a rapidly declining incidence in Western Australia.

Hymenolepis nana

360 cases of Hymenolepis nana infestation were detected and treatment supervised. Investigation of the families of origin was undertaken and preventive measures instituted where possible.

Trichuris Trichiura

46 cases of Trichuris trichiura infestation were followed up and treatment supervised.

Giardia lamblia

Positive findings of Giardia lamblia by Government Laboratories continued to rise from 535 cases in 1972 to 696 cases in 1973

Strongyloides stercoralis

23 cases of Strongyloides stercoralis infestation were detected and treatment supervised.

Isospora belli

Five cases were found and received treatment.

Hookworm (Ancylostoma duodenale)

Hookworm remains prevalent in the upper tropical region of the State.

Health education, treatment of soil, case finding, family follow up and treatment of cases were continued in 1973. 304 cases were reported by the State Health Laboratories to Community Health Services during the year. The field staff supervised treatment in each case and surveyed other members of the affected families as well as offering general advice to eradicate the disease.

In Kununurra, on request of Community Health Services staff, the veterinary surgeon examined 74 dogs of which 36 were destroyed. 14 of these were examined post mortem. In 9 dogs, Ancylostoma caninum was found but no round worms. Soil samples examined as far south as Roebourne showed nematode larvae.

Gastroenteritis

The intensive health education and hygiene campaign to reduce the incidence of gastroenteritis was continued throughout the year. Emphasis was placed on hand washing, cleanliness in food preparation, insect control, control of domestic animals, rubbish disposal, correct baby food preparation and protection, correct storage and

protection of perishable food stuffs, the dangers of stagnant water, water sterilisation, adequate fluid intake to prevent dehydration, the importance of seeking treatment early in the case of illness, liaison with Community Welfare Department homemakers, sewerage and night soil disposal, nappy hygiene, breast feeding, collection of specimens, toilet care, the aetiology of disease, care of septic tanks, demonstrations and discussions and the use of disinfectants. Some Public Health Field Nurses reported that water supplies were inadequate for their clients and that no hot water was available. Soap and detergent purchase were found to cause economic hardship in some areas. Another general complaint by field staff was the lack of proper facilities for food and clean clothing storage.

From Carnarvon alone Dr. Williams reported 47 cases of Salmonella infection, 43 cases of Shigella infection and 24 cases of enteropathic E. coli infection.

Field staff reported 18 deaths from gastroenteritis among their clientele in 1973.

Trachoma

Below the 26th parallel trachoma control is carried out by the Epidemiology Branch of the Department. Community Health Services staff administered blanket treatment for trachoma in Beagle Bay. La Grange Kalumburu and Hall's Creek to 1 421 persons. Besides these, 1 086 other individual cases were treated for the disease in 1973 by Community Health Services.

Monilia

Campaigns against Moniliasis were undertaken in several areas. 52 cases of infantile oral thrush were detected and treated. 43 cases of vaginal thrush were found and treated.

Tuberculosis

Field staff refer to the appropriate authority any persons suspected of tuberculosis.

On request from the Perth Chest Clinic, Community Health Services nursing staff also :—

1. Trace patients and contacts.
2. Transport patients to hospital.
3. Keep patients under surveillance.
4. Regularly check that patients are taking their treatment—in some cases this is a daily task.
5. Arrange X-rays.
6. Administer Mantoux tests and B.C.G. vaccinations.

In 1973 field staff reported that they traced 77 persons, transported 6 cases to hospital, arranged 211 chest X-rays, administered 241 Mantoux tests, gave 122 B.C.G. vaccinations and supervised the treatment of 35 patients.

Toxoplasmosis

94 persons were tested serologically for Toxoplasmosis in the Northern Region by Dr. Williams. The results of the test were as follows :—

Negative	34 Europeans 11 Aborigines	45	=	48 per cent.
Positive	40 Europeans 9 Aborigines	49	=	52 per cent.

These rather startling figures tend to bear out our suspicion that Toxoplasmosis infection is much more prevalent than generally believed. Investigations are continuing.

Anaemia

2 247 people were examined for anaemia and 162 were given oral therapy with iron and vitamins. 46 others required iron injections given by Community Health Services medical officers.

Prophylactic iron and vitamin supplements were dispensed to those people likely to become anaemic throughout the State.

CASE FINDING

Case finding is an integral part of Community Health Services field work. In 1973 the following specific cases were referred for medical attention.

	Aborigines	*Non Aborigines*	*Totals*
Endemic diseases	vide supra	vide supra	vide supra
Diabetes mellitus	30	1	31
Obesity	55	50	105
Abnormal development	150	17	167
Positive Treponemal....	254	11	265
Gonorrhoea Serology	195	113	308
Other venereal disease	20	5	25
Psychiatric illness			12
Rheumatic fever			10
Hypertension			10
Meningitis			1
Disease of the gall bladder			2
Cystic fibrosis			1
Urinary tract infection			9
Alcoholic (admitted to Graylands)....			2
Attempted suicide			1
Inguinal abscess			1
Lump in breast			1
Congestive cardiac failure			1
Gout			1
Thyrotoxicosis			1
Epilepsy			1
Brain tumour....			1
Chorea....			1
Cerebro vascular accident			1
Carcinomatosis			1
Renal calculus			1
Myxoedema			1
Hernia....			1
Total (ex Endemic Diseases)			962

In addition to the above, 291 Aboriginal and 211 Non-Aboriginal cases of venereal disease were followed up under medical direction and 292 Aboriginal and 14 Non-Aboriginal venereal disease contacts were traced by Community Health Services field staff.

Work was continued to ameliorate the effects on health from prostitution, alcoholism, excessive gambling, childhood pregnancy, and neglect of children.

Field staff reported that there was a general decrease in prostitution and childhood pregnancy in the target population but that alcoholism had definitely increased and was a major hazard to health besides causing an increase in the extent of child neglect.

DENTAL HEALTH

Dental health was added to Community Health Services targets in 1973. Fluoride tablets were distributed to pre-school and school children and pregnant women in areas of fluoride deficiency.

Dental hygiene was taught to the target population. A large number of people were screened to determine if dental treatment was required.

PREGNANCY

Efforts were made by field staff to ensure attendance to antenatal and postnatal clinics and that delivery occurred within a hospital. The situation in 1973 was much improved as compared to 1972. I am pleased to report that 75 per cent. of pregnant women attended antenatal clinic regularly, 84 per cent. attended at some time in the first 8 months of pregnancy, 57 per cent. attended a postnatal clinic at least once.

From the attendance to antenatal clinics 42 women were found to have positive serology for Wasserman or Kahn tests. Seven children were born with positive serology. The importance of attendance at antenatal clinics is stressed by these figures. 35 children of the 42 pregnancies above were born with negative serology as a result of treatment and the seven with positive serology did not necessarily show the stigmata of syphilis.

Three centres reported that it was not routine medical practice in the area for pregnant clients to have blood taken for blood grouping, serology, etc. 15 women were suffering from gonorrhoea at the time of delivery and nine cases of opthalmia neonatorum were reported by our staff. Apart from the obstetric care afforded, the early treatment of these cases was ensured by hospitalisation at the time of delivery.

In 1973, 15 clients were delivered outside of a hospital.

The reasons given were as follows :—

Precipitate delivery	2
Prematurity	8
Failure of communication	1
Born on RFDS aircraft	2
Unknown	2
	15

Breast Feeding

Community Health Services Staff continue to encourage breast feeding until the infant is six months of age. There remains a large proportion of mothers who do not, or will not, breast feed their infants. Reasons given in 1973 to our staff for failure to breast feed were as follows :—

Failure of lactation	34
Mother refused	34
Child hospitalised	20
Bottle fed from birth	18
Effect of contraceptive pills	13
Emotional upheaval	11
Prematurity	11
Ability to give to others to mind	9
Working mother	7
Maternal physical illness	5
Child neglected and fostered	4
Caesarian section	2
Congenital syphilis	1
Mother in jail	1
Breast abscess	1
Cleft palate	1
	172

FAMILY PLANNING

Taking into account the physical, cultural and religious factors, field staff offered advice to individuals and groups regarding family planning and child spacing.

Figures for 1973 were : —

Families advised	606
Pamphlets distributed	300

Of women referred and subsequently receiving some form of contraception the methods used were :—

Pill	164
Lippes Loop	105
Dalcon shield	29
Tubal ligation	86
Other methods	20
	404

The pill was found to be the most satisfactory method apart from tubal ligation.

Among 105 women using the Lippes Loop :—

Eight of the devices were expulsed or fell out,
Four were removed for medical reasons,
Four patients complained of menorrhagia,
One patient became pregnant with the loop *in situ*,

Of the 164 women taking contraceptive pills :—

One found the medication unsatisfactory,
Thirteen experienced difficulty maintaining lactation,
Three were unable to maintain the required schedule,
One became pregnant while taking the contraceptive.

DEPENDENCY PREVENTION

The report from the field staff in Broome is typical of other areas :—

The following were prevented from requiring hospitalisation :—

75 per cent. cases of minor trauma and infection.
80 per cent. cases of gastroenteritis.
99 per cent. cases of Hansen's Disease under surveillance.
95 per cent. cases of scabies.
95 per cent. cases of ancylostomiasis.
One case of tuberculosis.
Three psychiatric patients.
Two epileptic patients.
Five diabetic patients.

PENSIONERS

In 1973, 1 037 Aboriginal and 143 other pensioners were attended by Community Health Services. The work done was a simple expansion of the type performed in 1972.

SIGHT, HEARING AND LIMB CONSERVATION

Conservation of sight

In 1973, 6 124 persons were tested by Community Health Services for sight defect and other occular abnormalities. Of these 386 were referred for further treatment.

Conservation of Hearing

3 019 persons were examined for hearing defects and other aural abnormalities. Of these 130 were referred for further treatment and 416 received regular ear toilets from Community Health Services staff for chronic otitis.

Limb Conservation

Over 1 693 persons received treatment or advice for limb conservation in 1973. The staff estimate a definite saving from complete loss of 17 limbs.

SCHOOLS

Teaching in schools or to school children groups or pre-school groups was carried out in 15 towns. Subjects included Mothercraft, Health and Hygiene, First Aid, Sex Education, Venereal Disease, Personal Hygiene, Personal Female Hygiene, Growth Patterns, Nutrition, Anatomy, Physiology, Social Issues such as alcoholism, Immunisation and the work of Community Health Services. Practical work was carried out in some communities.

SCHOOL MEDICAL EXAMINATIONS

Complete school medical examinations were given to 5 482 children North of the 26th parallel.

Besides this, throughout the State, Public Health Field Nurses examined 26 739 school children for lice and scabies and helped to treat 2 252 cases.

Kimberley School Medical Examinations

School medical examinations were conducted by Medical Officers and field staff of Community Health Services of all schools in the Kimberley in 1973 with the exception of C.B.C. Broome.

A summary of the findings in the 22 schools visited follows :—

School Population of the Kimberley 1973

Number of schools visited			22
Number of children enrolled			2 653
Males	1 124		
Females	1 217		
No. children medically examined	2 341		
Absent at time of exam.	312		
	2 653		
Ethnic groups—			
Full descent Aboriginal	887		
Mixed race	805		
Caucasian	649		
	2 341		
Age groups—			
5–7 years	698		
8–10 years	809		
11–13 years	639		
14–16 years	195		
	2 341		

A summary of the findings in Kimberley schools is shown on Table 7.

It may be noted that only 27.7 per cent. of pupils seen in Kimberley scools are not of Aboriginal descent.

19.7 per cent. of pupils had trachoma at the time of examination and 11.3 per cent. suffered with chronic suppurative otitis media. 15.5 per cent. of pupils had carious teeth. This was markedly present in one Broome school where caries were present in 39.2 per cent. of pupils.

6 per cent. of children were 20 per cent. or more under the standard ratio of weight for height for age. This was particularly evident at the Fitzroy Crossing School where more than 20 per cent. of children were seriously under weight.

Table 7

SUMMARY OF ABNORMALITIES FOUND IN KIMBERLEY SCHOOLS—1973

Age Group (yrs.)	Weight for Height for age (after Baldwinwood)		Eyes									Ears					Teeth			Skin			Lungs			Nerv. System				Deformities							Hansen's Dis.				
												Chronic Suppurative Otitis Media																														
	20% Under Std.	20% Over Std.	Cardiac	Trachoma	Impaired Vision	Horiz. Nystagmus	Ocular Prosthesis	Corneal Opacity	Inf. Coloboma	Squint	Wearing glasses	Unilateral	Bilateral	Otitis externa	Foreign Body	Myringotomy Tubes	Enamel hypoplasia	Malocclusion	Caries	Trichophyton	Malazia furfur	Scabies	Bronchitis	Anaemia	Dextrocardia	Epilepsy	Hemiplegia	Facial Paralysis Ectopion Epiphoria	Mental Retard	Thoracic Scoliosis	Tibial Exostosis	Pectus excavatum	Supracondyla	Malunion	Wasted R. lower Lordosis	Ectopic Testes	Internal Register	External Register	Contacts	History of T'ment in Past	Taking Treatment
5–7	17	5	7	156	6	1	1	0	0	2	3	44	35	13	25	1	5	11	152	0	0	1	8	6	0	0	1	1	0	0	0	0	0	0	0	....	....	....	....	....
8–10	37	15	4	234	9	0	1	0	1	6	8	68	30	20	25	0	0	6	156	1	5	0	6	1	1	0	0	0	1	0	1	0	1	0	0	0	....	....	....	....	....
11–13	65	18	7	65	8	0	0	1	0	2	7	49	30	16	11	0	0	6	43	2	12	0	4	0	0	0	0	0	0	1	0	1	0	1	0	0	....	....	....	....	....
14–16	21	0	2	6	0	0	0	0	0	0	1	2	6	5	1	0	0	1	12	3	4	2	0	0	0	1	0	0	0	0	0	0	0	0	1	1	....	....	....	....	....
TOTALS	140	38	20	461	23	1	2	1	1	10	19	163	101	54	62	1	5	24	363	6	21	3	18	7	1	1	1	1	1	1	1	1	1	1	1	1	10	2	327	129	20

Pilbara School Medical Services

Schools and Kindergartens examined in 1973 :—

Marble Bar	154
Wittenoom	80
Tom Price	200
Sth Hedland Primary	202
Shay Gap	54
Goldsworthy	119
St. Joseph's Convent	90
Cooke Pt. Primary	142
Pt. Hedland Primary	88
Sth Hedland Sen. High	155
Sth Hedland Kindergarten	44
Cooke Pt. Kindergarten	36
Newman School	305
Jigalong x 2	131
Dampier, Roebourne and Wickham	311
Total	2 111

520 children were treated for nits and head lice.

Dr. Quadros, the Community Health Services Regional Medical Officer, Pilbara, comments :—

> " Much of our time was spent with schools becausc in the Pilbara the children have seldom becn examined medically—we are doing the pioneering work in this field. However, I feel that it will be difficult to conduct an annual check on each child. Most children are fairly fit and there is general cover by sisters during the year and if any problems arisc thcy arc rcferred to their own doctor. Probably three checks during the school life of a child is more than adequate. The major problems seen have been with eyes, ears and a small number of hcart lcsions which have to be followed up. Orthopaedic problcms such as genu valgum, flat fcct and scoliosis occur in a minority which arc alrcady picked up prior to school entry. I am currently compiling statistics on wcight/height but unfortunately thesc will not be to hand by the time this report is despatchcd

North West School Medical Services

Schools and Kindergartens examined in 1973 :—

East Carnarvon Primary	100
Central Carnarvon Primary	150
Carnarvon High	42
Carnarvon Convent	70
Exmouth Primary and Kindergarten	179
Shark Bay	34
Uselcss Loop	35
Meekatharra High	250
Meekatharra Kindergarten	30
Karalundi Mission	40
Wiluna	30
Wiluna Mission	50
Albion Downs Station	20
Total	1 030

Examination and Treatment for Nits and Head Lice :—

School	*Examinations*	*Treatment*
E. Carnarvon	400	40
Central Carnarvon	500	50
Carnarvon Convent	70	5
Meekatharra	1 800	300
	2 770	395

LIAISON

Liaison was increased and maintained with other agencies and people concerned in the field in 1973. The co-operation received, greatly helped staff to perform their work.

The Aboriginal Medical Service

During the year the New Era Aboriginal Fellowship medical sub-committee was disbanded and a Health Committee formed which consisted largely of Aboriginal members. An application to Aboriginal Affairs in Canberra produced a grant of $105 000 to establish a clinic run, and as far as possible staffed, by Aboriginals for Aboriginals. The inexperienced committee had a number of early difficulties but by mid-September a building at 108 Beaufort Street had been leased. Clinics commenced with voluntary doctors.

Throughout this early period Community Health Services gave actual assistance in terms of nursing staff and laboratory facilities. In order to assist them further two Community Health Services medical officers provided a daily daytime clinic service in addition to the voluntary evening clinics already operating—this was continued apart from the Christmas recess until Dr. Don Reid took up his appointment with Aboriginal Medical Service in January.

In order to assist the development of the Aboriginal Medical Service practice, Community Health Services field staff consistently refer clients to this centre.

In the latter months of the year one Aboriginal Medical Service committee member suggested a joint Aboriginal Medical Service/Community Health Services venture to operate in the Swan Valley area for the grape pickers and others living along the river-bank. Community Health Services welcomed this type of co-operation and were able to supply a clinic caravan and field staff at short notice. However, Aboriginal Medical Service, unfortunately, were unable to supply the field worker as expected. Community Health Services look forward to further co-operative ventures.

Overall Community Health Services feel their relationship with Aboriginal Medical Service should be one of continuing friendly associations ; Aboriginal Medical Service concentrating on therapeutic services and Community Health Services on long term prevention. There remains a hiatus in the area of Aboriginal mental health and also alcoholism.

RECORDS

Organisation and Methods Section and the Computer Programmer continued to plan the records section. Until these plans come to fruition all data and records continue to be stored.

HEALTH AUDITS

In 1973 Community Health Services began a total health audit of the population concerned in Western Australia. Every client audited was offered :—

1. A complete medical examination.
2. An extensive laboratory investigation.
3. Emergency treatment.
4. Referral to appropriate resources for neccssary investigation or treatment.
5. Follow up and guidance.
6. Computerised recording of medical data.

So far this scheme has been most successful and besides the immediate and long term value to the individual clients it is providing the necessary data base lines for evaluation by cost/benefit analysis.

1 178 clients undertook the audit in 1973.

Coolbellup	30
Geraldton	250
Moora	283
Mullewa	206
Warburton Ranges	409
	1 178

Summaries are given below of the state of health found in these communities.

WARBURTON HEALTH AUDIT

Community Health Services conducted a health audit in Warburton Ranges in August, 1973. Preparation of the population for the audit was enhanced by the services of Aboriginal Affairs Planning Authority Anthropologist, Mr. Kim Ackerman. The Community Health Services team consisted of three doctors, two trained nurses, two dietitians and three laboratory technicians. Two nurses from Child Health Services accompanied the team for part of the time.

The audit was completed in three weeks. A summary of the audit follows :— Table 8 shows the age distribution of the population.

Table 8

POPULATION

Age	Male	Female	Total
0–4 years	38	45	83
5–19 years	71	68	139
Adults	68	96	164
Pensioners	13	10	23
Total	190	219	409

Trachoma

Tables 9 and 10 show the prevalence of Trachoma in Warburton in 1973. The low prevalence of the late stages of Trachoma in the 0–4 years age group should be noted.

Table 9

TRACHOMA

Sex	Age	Stage 1	Stage 2	Stage 3	Stage 4	Total
Male	0–4 years	1	12	3	2	18
	5–19 years	0	6	4	26	36
	Adults	0	0	15	13	28
	Pensioners	0	0	0	2	2
	Total	1	18	22	43	84
Female	0–4 years	0	16	2	2	20
	5–19 years	1	8	7	25	41
	Adults	0	2	2	56	60
	Pensioners	0	0	0	3	3
	Total	1	26	11	86	124
Grand Totals		2	44	33	129	208
% of Community		0·5	10·8	8	31·5	50·8

Table 10

TRACHOMA

Age	Both sexes	% of age groups	% of Community
0–4 years	38	45·8	9·3
5–19 years	77	55·4	18·8
Adults	88	53·7	21·5
Pensioners	5	21·7	1·2
Total	208		50·8

Aural Diseases

Chronic suppurative otitis media was the predominant ear pathology found among pre-school children affecting 37.3 per cent. of that age group. Refer Table 11.

Twenty-nine dry perforations were found and also seven cases of otitis externa of which the majority were clinically fungal in origin. Refer Table 12.

All school age children who would co-operate were tested with an audiometer and clinically. No gross impairment of hearing was found.

Table 11

CHRONIC SUPPURATIVE OTITIS MEDIA

Age	Male Bilateral	Male Unilateral	Female Bilateral	Female Unilateral	Total	% of age Group
0–4 years	8	6	10	7	31	37·3
5–19 years	9	6	4	8	27	19·4
Adults	0	0	0	1	1	1·1
Totals	17	12	14	16	59	14·4

Table 12

PERFORATION AND SCARRING OF TYMPANIC MEMBRANE AND OTITIS EXTERNA

Age	Male						Female						Totals	% of age group
	Tympanic Membrane				Otitis Externa		Tympanic Membrane				Otitis Externa			
	Perforation		Scarring				Perforation		Scarring					
	Bi	Uni	Bi	Uni	Bi	Uni	Bi	Uni	Bi	Uni	Bi	Uni		
0–4 years	1	1	0	0	1	0	0	0	0	0	0	1	4	4·8
5–19 years	2	11	0	4	1	2	2	8	3	3	0	0	36	25·9
Adults	0	0	1	1	0	0	3	1	0	0	1	1	8	4·3
Total	3	12	1	5	2	2	5	9	3	3	1	2	48	11·7

Bi = Bilateral Uni = Unilateral

Nasal Diseases

Bilateral anterior nasal discharge was a common finding. The discharge was usually mucoid rather than purulent. No attempt was made by individuals to wipe the discharge away so that excoriation of the nose and upper lip was common. There was a definite relationship between cases of trachoma and nasal discharge with excoriation. See table 13.

Ornamental perforation of the nasal septum was seen in older and more tribalised adults but no perforation was found in persons younger than 45 years.

Table 13

NASAL DISCHARGE

Age	Male			Female			Total Nasal Disease	% of age group with Nasal Disease
	Anterior Nasal Discharge	Excoriation	Excoriation and Trachoma	Anterior Nasal Discharge	Excoriation	Excoriation and Trachoma		
0–4 years .	20	10	7	24	13	10	44	% 53
5–19 years ..	29	12	8	33	6	3	62	44·6
Adults and Pensioners	1	1	1	20	4	3	21	11·2
Totals	50	23	16	77	23	16	127	31·1

Abdominal Disease

One infant was found to have an enlarged liver in association with a markedly abnormal liver function test

Deformities

The following deformities were found :—

Two cases of malunited long bone fractures.

Two lower leg amputations with well fitted prostheses.

Two adult males with foot drop resulting from leg spearing. One of these men had an indolent ulcer at the side of an amputated pollex.

One middle aged woman had a gross Kyposis (Gibbus) with bilateral peroneal atrophy and genu-recurvatum.

Most initiated males had subincision as well as circumcision.

The antecubital fossae in older initiated males showed marked scarring from repeated ceremonial venupuncture.

Anaemia

Anaemia was present in approximately one third of the community. See table 14. 7.4 per cent. of the people examined showed a haemoglobin concentration of 10g per cent. or less and 29.5 per cent. a concentration of 12g per cent. or less anaemia was of the iron deficiency type.

Hansen's Disease

No manifestation or stigma of Hansen's Disease was found in the community.

Urinary Diseases

A surprising number of clients showed pus cells and bacteria in their urine (15.4 per cent.). Infections were twice as common in females as males after early childhood. See Table 15.

Table 15

URINARY INFECTIONS

Age	Male	Female	Total	% of group by age
				%
0–4 years	4	4	8	2
5–19 years	1	13	14	3·4
Adults	14	27	41	10
Totals	19	44	63	15·4
Community Totals	190	219	409	
% of sex affected	10%	20·1%		

Metabolic Disease

No case of diabetes mellitus was discovered in the Warburton community.

Table 14

ANAEMIA—HAEMOGLOBIN CONCENTRATION g·%

Age	6		7		8		9		10		11		12		13		14		15		16		17		18		Totals
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	
0–4 years	0	0	0	0	0	0	1	0	3	4	6	9	5	5	7	7	0	2	1	1	0	0	0	0	0	0	51
5–19 years	0	1	0	1	0	0	0	1	4	1	10	1	16	12	25	28	12	18	6	6	4	0	0	0	0	0	146
Adults and Pensioners	0	1	1	0	2	0	1	0	4	2	4	7	1	5	5	19	10	24	12	22	20	9	14	3	3	0	169
Totals	0	2	1	1	2	0	2	1	11	7	20	17	22	22	37	54	22	44	19	29	24	9	14	3	3	0	366

Dental Status (Refer Table 16)

Generally the dental status of the community was good. Two severe cases of staining were found in the children possibly as a result of antibiotic therapy. One child showed enamel hypoplasia. Caries in the young were infrequent and in adults the caries were mostly in the bilateral lower 5 or 6 which could be related to the carrying of a bolus of tobacco at that site, or the practice by men of straightening their spears by forcibly pulling down on the ends of the spear hard across the lower teeth. Attrition was a feature in middle aged adults. Everyone had sufficient teeth for mastication. Initiated men often had an upper incisor tooth removed for ceremonial purposes. There was little evidence of missing or filled teeth in the children. A number of adults had pyorrhoea.

Table 16

DENTAL DISEASE

Age	Male				Female			
	Staining	Caries	Extraction	Attrition	Staining	Caries	Extraction	Attrition
0–4 years	1	1	0	0	1	2	0	0
5–19 years	3	7	2	0	0	2	2	0
Adults and Pensioners	....	11	9	7	3	13	5	17

Skin Diseases

Pediculosis was rare. There was evidence of recently treated scabies. Some multiple infected lesions of the extremities were found.

Cardiovascular Disease

Cardiovascular disease was minimal.

Upper Respiratory Tract Disease

Upper respiratory tract infection was insignificant in the community at the time of the audit.

Lower Respiratory Tract Disease

Nine cases of bronchitis were found. Coughs were common but not associated with positive clinical findings. One adult was found to have pulmonary tuberculosis and was evacuated to Kalgoorlie.

Central Nervous System Disease

It was noted that petrol sniffing was being used by children as a medium for tension discharge.

GNOWANGERUP HEALTH AUDIT, January, 1973

Dr. Ann Troup, Regional Medical Officer, South West.

A health audit was conducted by Community Health Services staff in Gnowangerup for three weeks in January. The client population was offered " a thorough check up ". Due largely to the good work of Sister Wishart there was an attendance of 220 and only one family with pre-school children absented themselves. Some mothers declined examination for themselves and only a small number of adult males attended. The assistance of a male medical student and evening clinics attracted most of the male attenders.

Some interesting social points emerged :—

1. Almost no-one over the age of 27 years was functionally literate—this corresponds to the year in which Aboriginal children started to attend the state school. Older people had either no schooling or attended the mission school. However, a number of adults under 27 who had attended school into their teen years were unable to read adequately.

2. Parents overall attitudes to education were far from European norms. Few of them could name accurately their child's school grade. To spend two years in Grade 1 was considered normal. Few parents were able to assist in any way with children's schooling : with few skills themselves they did not expect their children to achieve much more than minimal literate and numeral efficiency. Since training for upward mobility implied family separations there was no real encouragement for education.

3. A few people from Gnowangerup had never been to Perth. In general, areas of travel reached from Perth to Esperance. Most had been to Albany, about six people had been to Kalgoorlie. One family whose origin was around Moora had travelled a little more. The most travelled people were men who had worked with shearing teams up as far as the Pilbara, but even those named their routes by stations and had little town experience.

4. All the adult males and most of the females admitted to drinking alcohol—of these, only one, a female who drank very little had not been in gaol for offences involving alcohol. Aboriginal people with two exceptions could not be served in the public bar and could only buy cans of beer from the " white door " Noongar's bar.

Overall the health was better than expected—the degree of Aboriginal concern about ill health is partly reflected in the attendance. Major problems, newly diagnosed, included one four year old child with congenital heart lesion and two children both aged four with congenital syphilis ; there was some overt anaemia especially in male children under 5 years. Extremely low serum iron levels indicated that the majority of people at all ages rarely maintained adequate haemoglobin levels. See Graph 5.

Serum folate activity was also generally low especially in younger age groups and in older alcoholics. Of the pregnant women seen, only half were receiving any antenatal care.

The most apparent chronic problem was chronic otitis media, in one or both ears. Although ultimately hearing loss is remarkedly small in these children, the degree of day to day deafness varies considerably and many are certainly handicapped at school as a result. Several adults with severe hearing loss had employment problems. One

of these, a young man of 27 years with a hearing loss of 80 decibels in both ears had attended school to the age of 15 years but still could not read or write. Only one of these children had seen an audiometer before. It appears that when the School Medical Services is known to be coming to the school many young clientele children deliberately absent themselves.

A number of cases of gonorrhoea and syphilis were diagnosed and treatment arranged. A number of women were suffering from trichomonal or monilial vaginitis. Almost all the children had cuts on the feet in various stages of infection and healing—the result of broken glass scattered about the houses.

Of all people under 20 years of age only 10 per cent. were above the 50th centile for either height or weight. The minority fell below the 10th centile for both weight and height. The fact that teenagers scored rather better than young children might suggest that the nutritional situation has in fact become worse over the past few years in Gnowangerup. See Graphs 3 and 4.

Another notable problem was the stress experienced by young mothers, who were involved in upward mobility.

The health attitudes were interesting. For a large number of the group, health was seen as a goal still to be achieved. The chief obstacle was seen to be delivery of services. A smaller but significant group were quite fatalistic about health problems. Their goal was survival rather than good health. Almost no-one saw poverty or lack of education as an obstacle to health but the need for good housing and self contained washing facilities were recognised.

Many people were not covered by any form of health insurance.

In March the clientele were informed of the results of the Health Audit and cases discovered were followed up. This included the treatment of Trachoma, Venereal Disease, assessment at Irrabeena, evaluation of deafness etc. Some 75 people received treatment as a result of the survey and several were transferred to Perth for major investigation.

Graph 3 is a scattergram on a percentile chart showing the distribution of clients in Gnowangerup by height and age. Most fall below the 50th centile. Graph 4 is a similar scattergram showing weight for age.

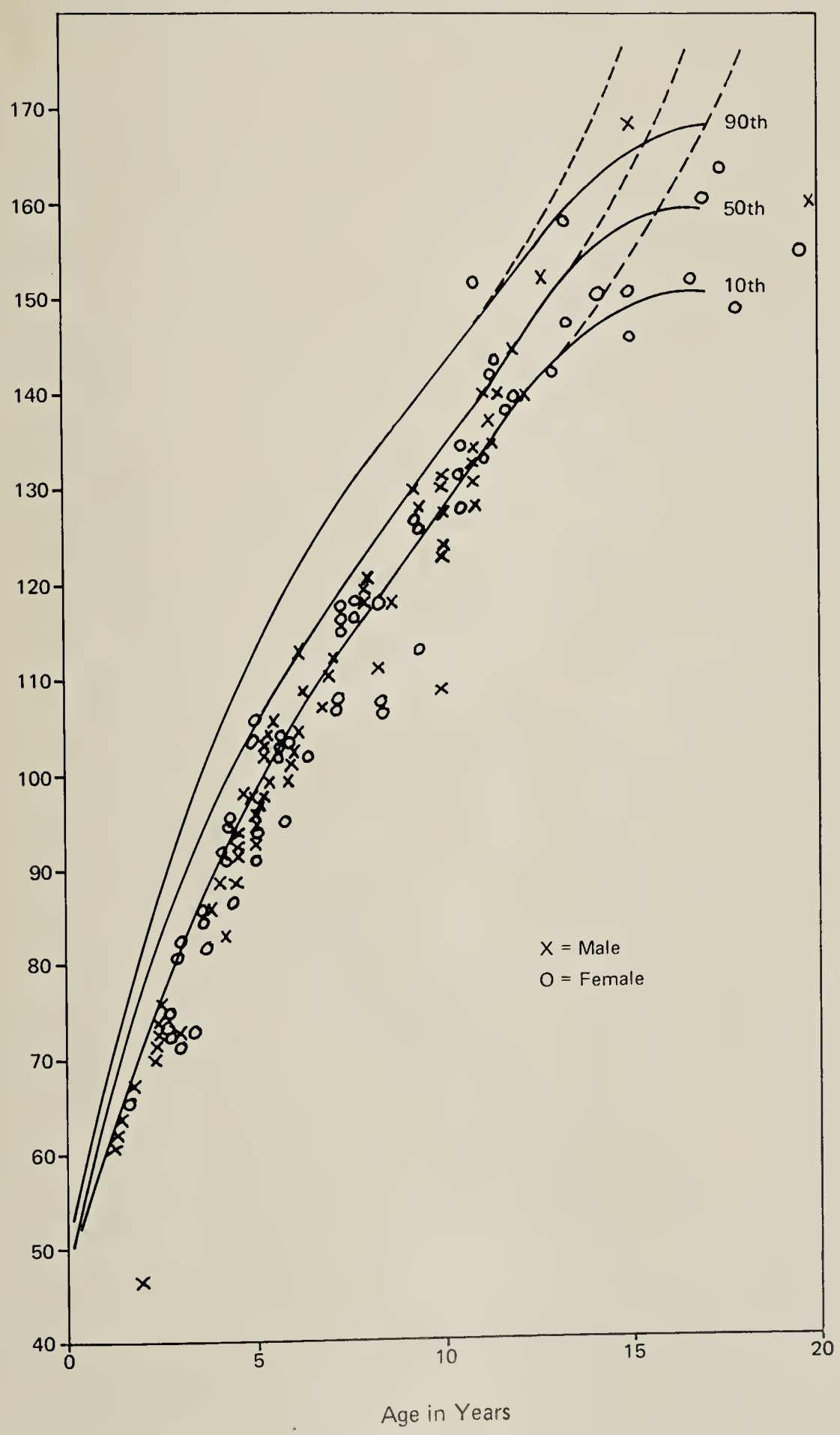
Graph 5 is a scattergram to show the distribution of female clients in Gnowangerup by age and serum iron concentration.

PERCENTILE CHART – Height for Age

Gnowangerup 1973

Health Audit – C.H.S.

GRAPH 3

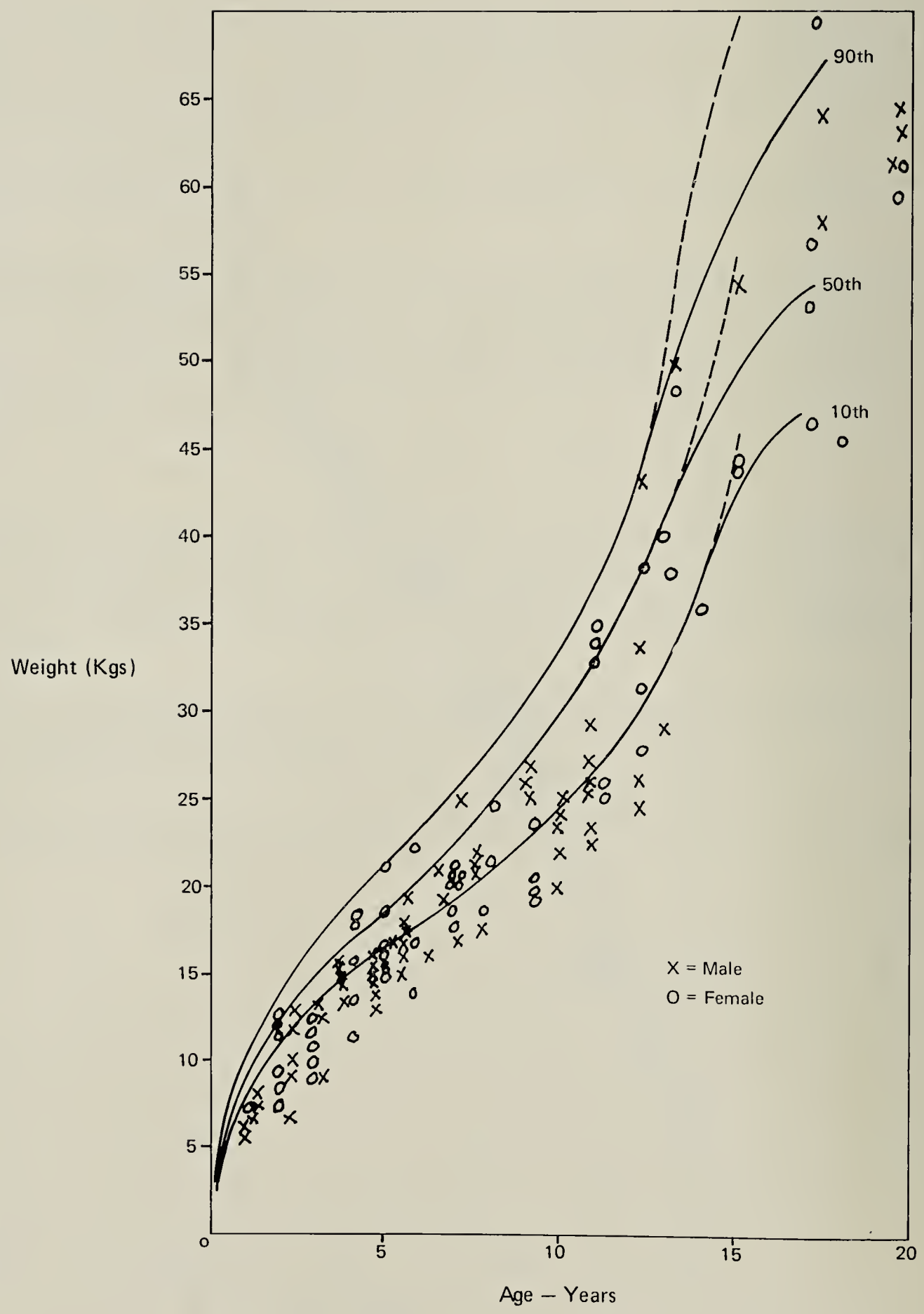


PERCENTILE CHART – Weight for Age

Gnowangerup 1973

Health Audit – C.H.S.

GRAPH 4



Graph and
Scatter Chart

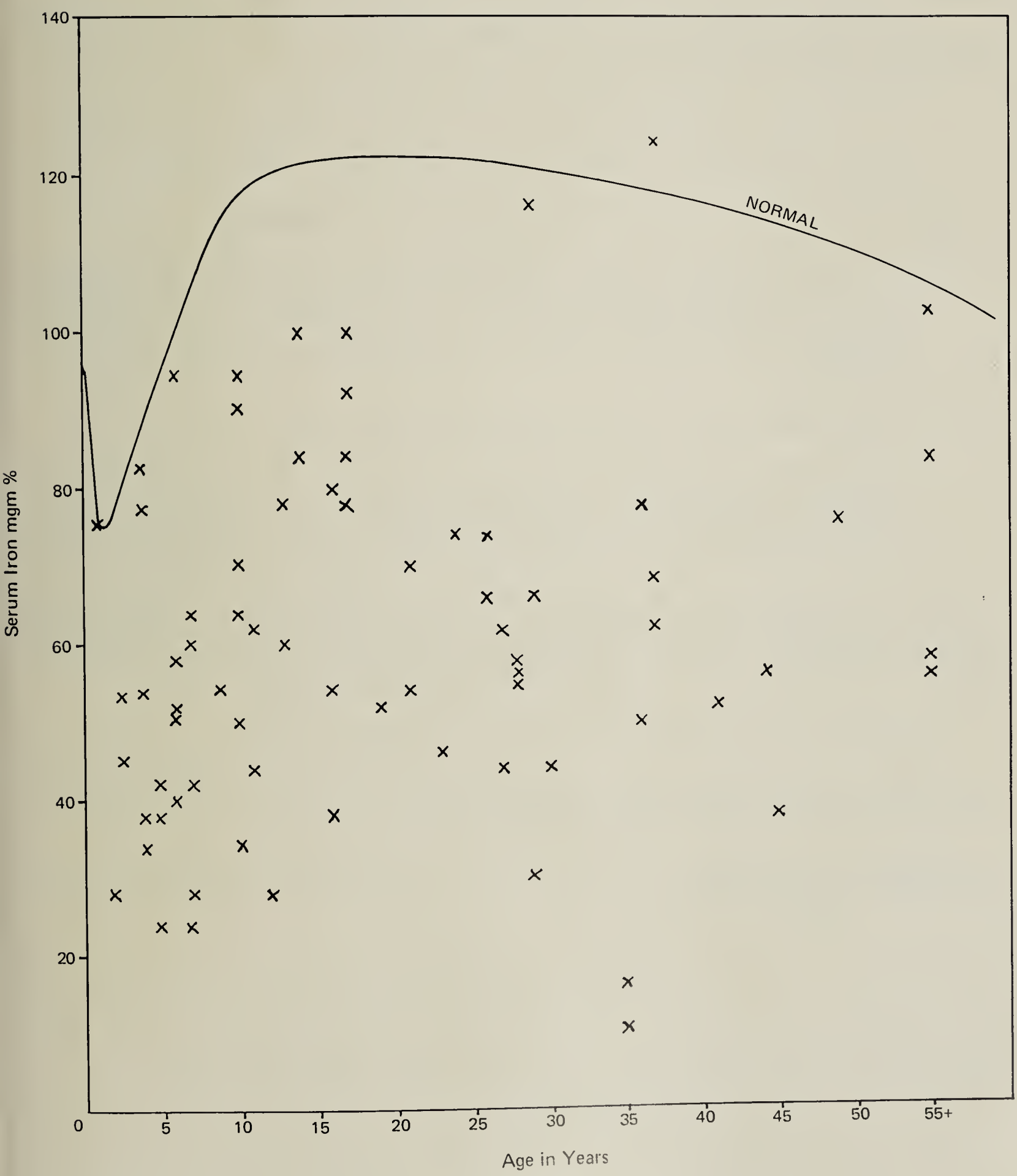
GNOWANGERUP FEMALE SERUM IRON

By Age

Health Audit Jan 1973

C.H.S.

GRAPH 5



GERALDTON HEALTH AUDIT

The Geraldton Health Audit was conducted jointly by Community Health Services staff and Mr. David Marshall, the medical student who provided help in Gnowangerup.

It was hoped in this way to involve more men in the audit. Transport and delivery of patients in Geraldton was more complex than in Gnowangerup. Community Welfare homemakers provided invaluable assistance. The hall belonging to the Aboriginal Progress Association was used as a venue.

In Geraldton 250 clients were examined. Although a smaller proportion of the population attended, the audit was seen as being of value and was followed by a request from Mullewa for a similar service.

Geraldton people differed from Gnowangerup people in a number of parameters :—

1. More of the older age group of people in Geraldton were literate.

2. Many more had travelled and the travel was more extensive.

3. A much more severe degree of family disruption had occurred in Geraldton and could be traced to the early 1900's, whereas almost all Gnowangerup people were born and lived in that area. The majority of people in Geraldton had links with Carnarvon, the line to Meekatharra or the old Moore River Settlement.

4. Many of the clients were light skinned and blue eyed.

5. Most people were housed although the maintenance of tenancy posed grave problems. As the reserve was abolished there was no alternative to severe overcrowding of houses. With five primary schools in Geraldton children were very mobile from school to school and truancy was difficult to control.

A very striking feature was the number of obese females associated with diabetes mellitus. A number of these obese ladies also had varying degrees of prolapse and stress incontinance. The result of taking this finding to a meeting of Aboriginal people was the formation of a group similar to Weight Watchers.

A small survey was conducted on the use of health services.

In spite of technical problems a very clear picture emerged of a different style of service use from the middle class Australian norm.

Graph 6 is a scattergram of the serum iron concentration of the client population in Geraldton by age and sex.

Graph and
Scatter Chart

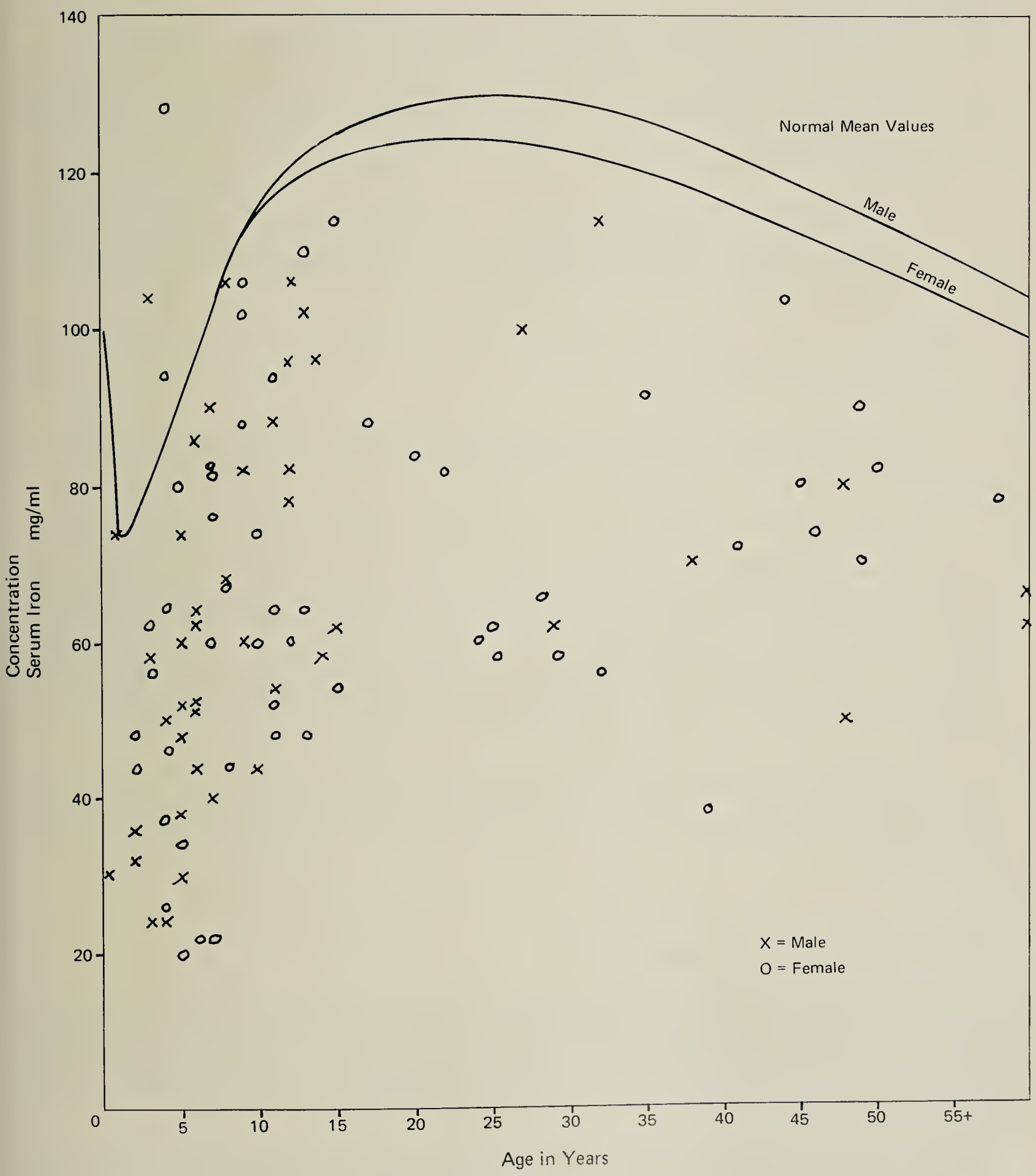
GERALDTON SERUM IRON

By Age

Health Audit Jan 1973

C.H.S.

GRAPH 6



Moora Medical Audit

The Medical Audit in Moora was conducted in mid-winter in a rather cold building—the old infant health centre. Community Welfare homemakers again provided a great deal of help with the transport of people. As in Geraldton, local Aboriginal leaders encouraged people to attend. This Audit was during term time so local schools were approached and proved most co-operative. 283 clients attended.

Social Comments :—

1. Illiteracy is quite common among older people as in Gnowangerup.

2. A number of people had travelled quite extensively including visits to the Eastern States.

3. Most people living in the area came from that area or from the line to Meekatharra although some had lived in the Kimberley for many years. Many families had their origin from caste children brought from as far afield as Eucla and Wyndham to the Moore River Settlement.

4. The closer proximity to Perth has created an altogether different style of usage of medical services.

Possibly the most worthwhile result in Moora was the early detection of two cases of carcinoma of the cervix both of which have since received treatment.

As it was winter a variety of major and minor respiratory infections were seen.

More severe problems associated with alcohol were seen in Moora than elsewhere. Severe personality disorder generally appeared to be more common though this is well known to be difficult to evaluate in a cross cultural setting. The style of mothering often reflected the several generations of institutional background and may account to some extent for the preceding problems. A very strong impression was gained that over some time upward mobility had involved leaving Moora so that with few exceptions those who remained were those who had less experience of success.

Unfortunately records of height and weight were discovered to be valueless ; the inaccuracies in the recording were not detected for several days—too late for correction. The distribution of Serum Iron Concentrations by age and sex are included. See Graph 9.

Coolbellup Pilot Medical Audit

This was conducted as a trial project to assess the response of city clientele to this type of service. The only available venue was the Sports Pavilion at Tempest Park oval. Although geographically well sited, it was very cold, windows did not allow for adequate privacy and tin roof meant all communication stopped when the rain beat down.

However, some 30 people attended with quite a variety of problems. One man had a colostomy following abdomino-perinial resection for carcinoma and had not received any medical follow up for two years. One woman, herself attending Sir Charles Gairdner Hospital to keep costs of Intal at manageable level, had children attending both Princess Margaret Hospital and Fremantle Hospital regularly. Among the small children emotional problems were very obvious.

The urban situation indicated that most families had contact with some health agencies but those agencies were often used inappropriately.

The distribution of Serum Iron Concentrations by age and sex are included in Graph 9.

Mullewa Health Audit

206 persons in Mullewa participated in the Health Audit. Trachoma was found to be prevalent among the examinees. There were three cases of glycosuria—all previously known and one previously unknown case of gonorrhoea and six positive F.T.A.'s. The mean haemoglobin concentration was 12.2 μgm per cent. The mean Serum Iron Concentration was 66.9 μgm/ml. The average Folate level was 5.3 ng/ml. Graphs 7 and 8 show scattergrams of height for age and weight for age which are within normal limits.

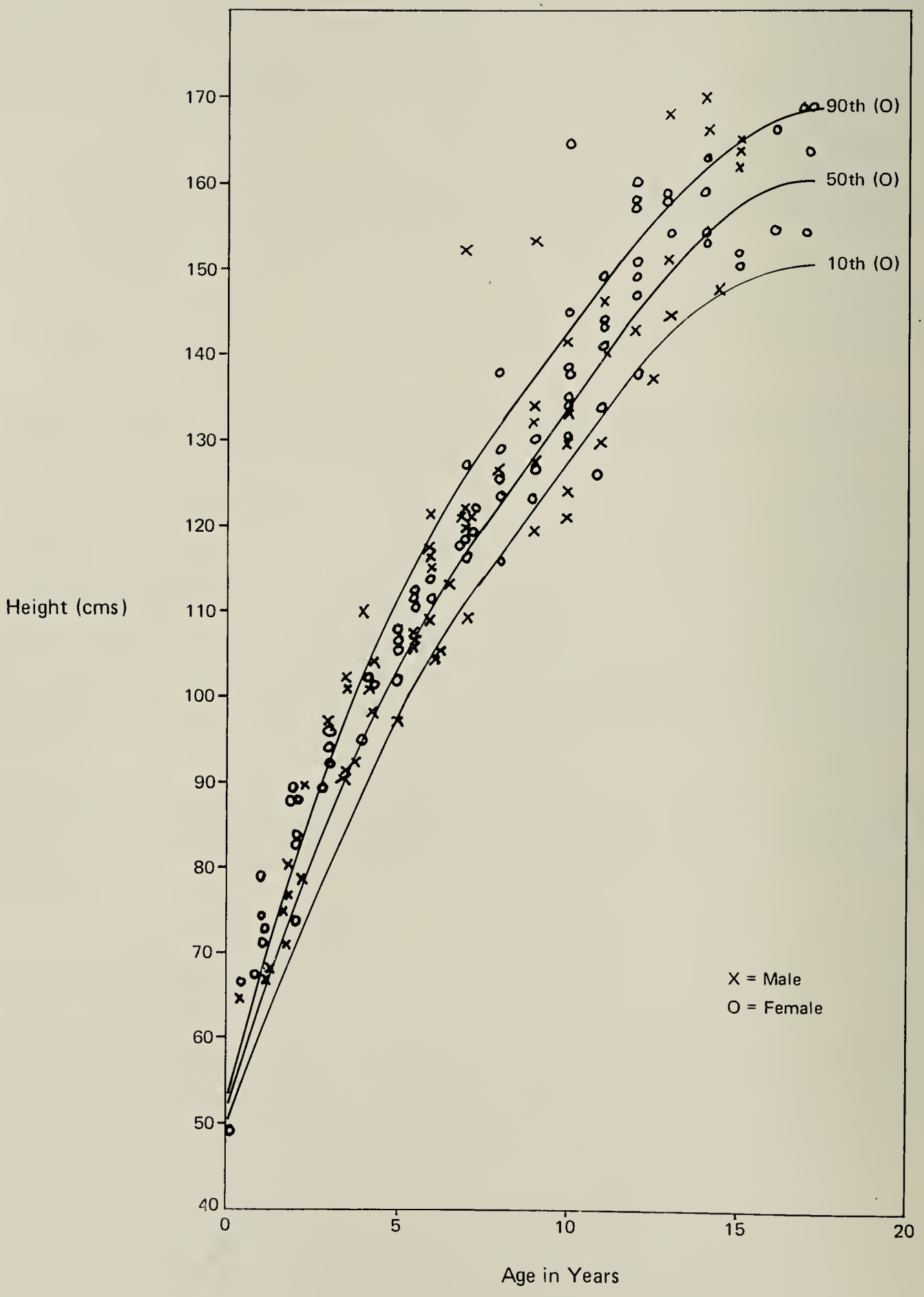
Graph 9 shows the combined audit serum iron values.

PERCENTILE CHART – HEIGHT FOR AGE

MULLEWA 1973

Health Audit – C.H.S.

GRAPH 7

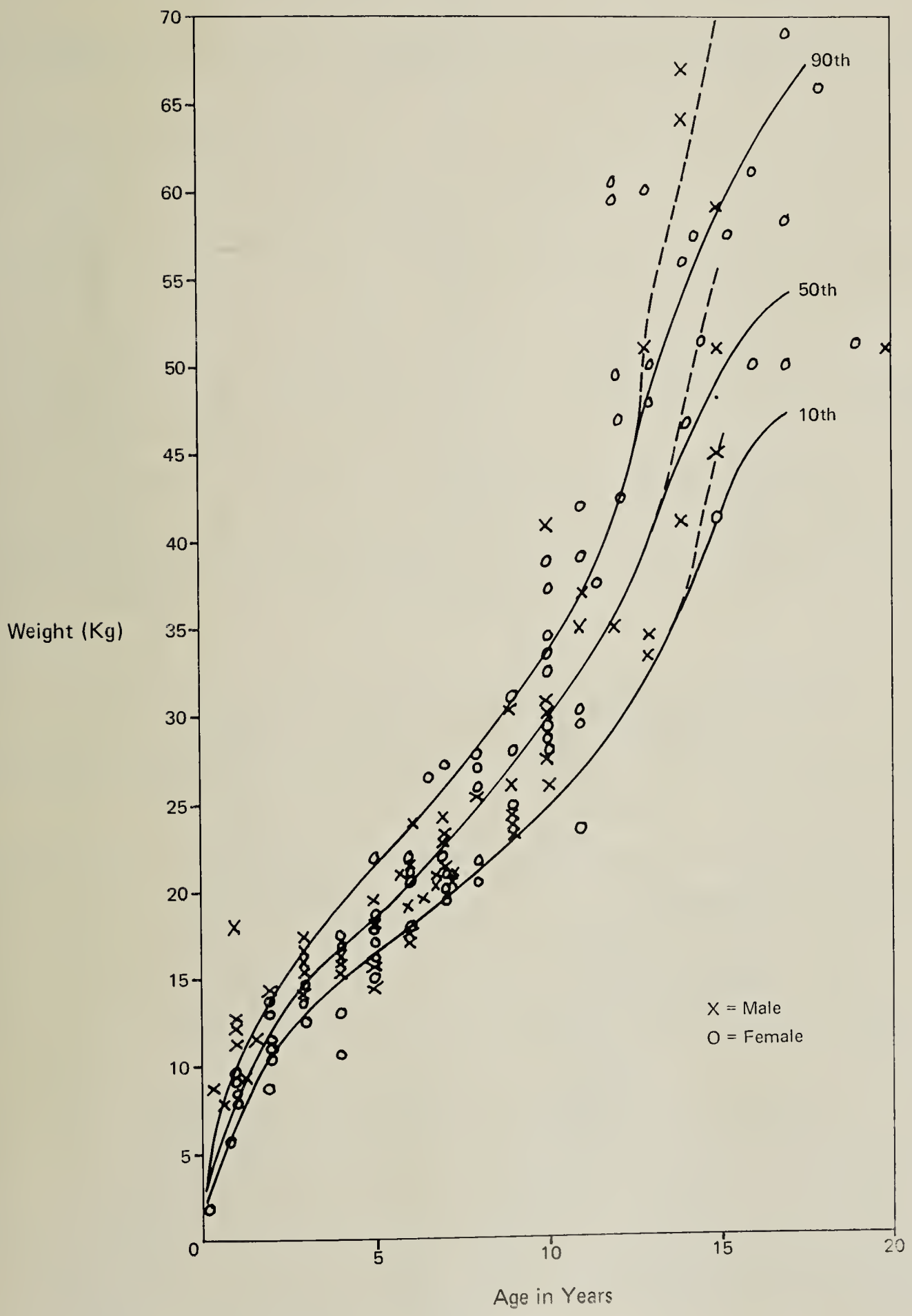


PERCENTILE CHART — Weight for Age

Mullewa 1973

Health Audit — C.H.S.

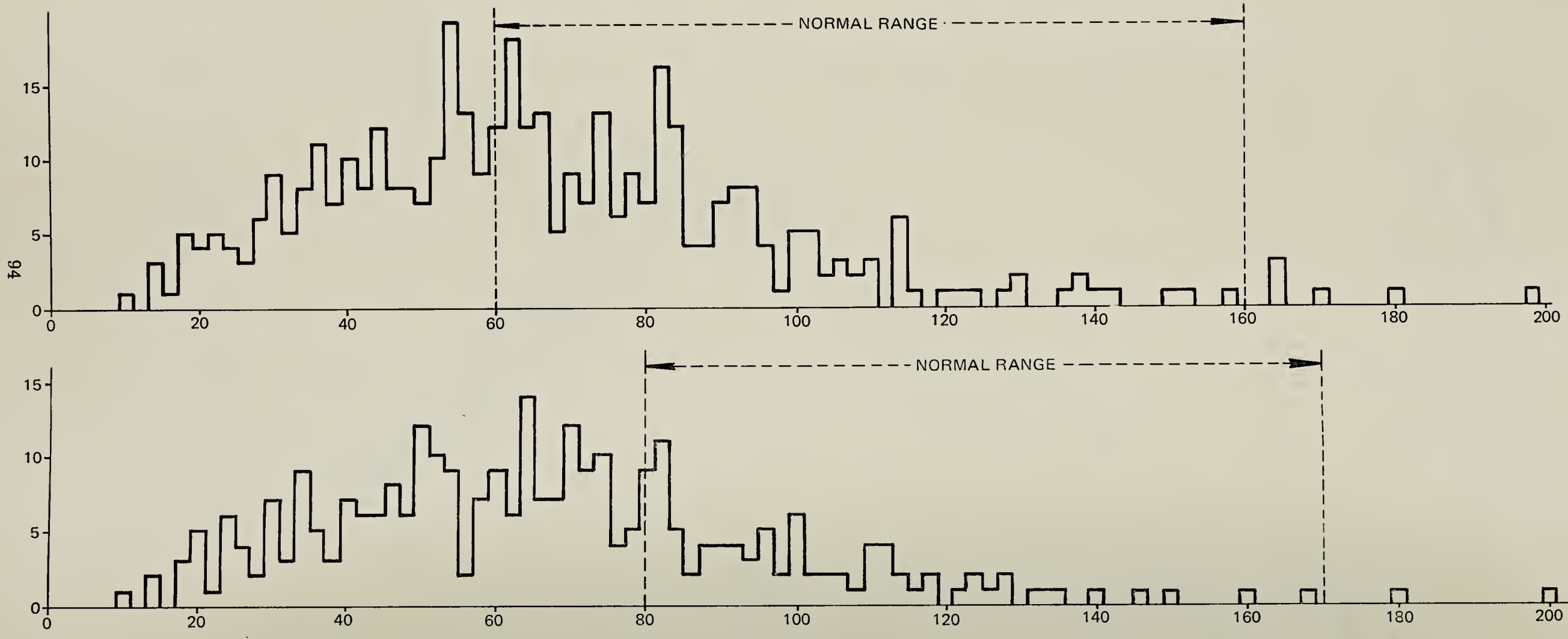
GRAPH 8



SERUM IRON VALUES (Moora, Mullewa, Gnowangerup, Geraldton, Coolbellup)

Community Health Services Audit 1973

GRAPH 9



Mean Serum Iron — Geraldton 74 μgm% Moora 69 μgm%

Gnowangerup 66.2 μgm% Mullewa 66.9 μgm%

RESEARCH AND SURVEYS

Community Health Services took part in or conducted the following research or survey projects in 1973 :—

1. Venereal Disease Surveys in conjunction with the Special Clinics Branch of the Department.
2. Nutritional Anthropometric Survey of children 0–4 years of age in the Kimberley.
3. Investigation of water available at Fork Creek, Wyndham in conjunction with the Public Works Department.
4. Hansen's Disease surveys.
5. Surveys for anaemia and hookworm infestation.
6. A dental survey at Fitzroy Crossing in conjunction with the Dental Services Branch.
7. An investigation of " Latchkey Children " in the Lockridge area.
8. Health audits at Coolbellup, Geraldton, Gnowangerup, Moora, Mullewa and Warburton Ranges.
9. A dental survey conducted by Professor Kailis and Mr. Medcalf.
10. An investigation of the needs of the elderly in Kalgoorlie for the Extended Care Branch of the Department.

TRAINING PROGRAMMES AND CONFERENCES, ETC.

Community Health Services were involved in the following training programmes in 1973 :—

1. First Aide training for Community Health Services Camp Nurses.
2. Driving classes for Community Health Services Public Health Assistants.
3. Orientation programmes for new Community Health Services staff.
4. Inservice training programmes for Community Health Services Public Health Assistants.
5. Inservice Conferences for Community Health Services field staff.
6. Delegation to the Alice Springs Community Development Workshop.
7. Delegation to Seminars at Broome, Kalgoorlie and the Summer School.
8. Delegations to clinical meetings at Osborne Park Hospital, Swan Districts Hospital and Princess Margaret Hospital.
9. Delegation to the Seminar on " Health in Cities " in Sydney.

10. Submissions to the Royal Commission on Aboriginal Affairs and the Senate Enquiry into the Environment.

11. Presentation of a paper to the A.N.Z.A.A.S. Congress " Mental Health in Aboriginal Communities " by Dr. A. Troup.

12. Nine Public Health Field Nurses were granted Scholarships to enter the Public Health Nursing Diploma Course at the West Australian Branch of the College of Nursing, Australia, in 1973. The following Public Health Field Nurses gained their Diploma of Public Health Nursing and are congratulated :—

Miss N. G. Cappaert	(1D 4P)
Miss C. Harper	(5C)
Mrs. J. P. Frantom	(5C)
Miss M. A. McDonald	(2D 3C)
Miss J. McDonald	
Miss M. L. Ross	(2D 2C 1P)
Miss K. Shadbolt	(3C 2P)
Miss E. M. Wallent	(3C 2P)
Miss J. O. Wishart	(3D 2C)

P = Pass, C = Credit, D = Distinction

In addition to the College Course the same Public Health Field Nurses underwent a special training course which included mechanics and advanced driving, aeronautics, and flying nursing, two way radio operation, map reading and bush treking, national safety, self defence, advanced first aide and medical photography.

ABORIGINAL INFANT MORTALITY

Data was collected concerning 38 Aboriginal infants who died in 1973.

Table 17 below shows the stated causes of death, and the age at the time of decease. 44.73 per cent. of the cases died due to gastroenteritis, acute respiratory diseases or both at an average age of six months.

Aboriginal Infant Mortality Rate

Due to the method of Registration of Births which does not show race, no accurate statistics are available for calculation of the Aboriginal Infant Mortality Rate in Western Australia in 1973.

Table 17

ABORIGINAL INFANT MORTALITY

	Group	Case	Diagnosis	Age at Death	Group % and Average Age	
1	Congenital Abnormalities	1	Congenital syphilis	1 month		
2		2	Trisomy 18 syndrome	6 weeks	8 weeks	
3		3	Congenital cerebral aneurysm cerebral haemorrhage	5 months		
4		4	Multiple abnormalities, cri-duchat	10 hours	10·53%	
5	Failure to Resuscitate from Birth	1	Prematurity, Septal ventricular defect	1 day		
6		2	Prematurity, instrumental delivery	1 day		
7		3	Twin No. 2, breech delivery following internal version. Mother prinupara and anaemic. Failure to resuscitate	1½ days		34·21%
8		4	Twin No. 1, intracranial haemorrhage, periodic apnoea, mother primipara	18 days	6 days	
9		5	Foetal distress, delivery by Caesarian section. Hypoxic encephalopathy	4 weeks		
10		6	Twin No. 2, cord round the neck and shoulder presentation. Delivered by Caesarian section	0 days	23·68%	
11		7	Twin No. 2, cord round the neck	0 days		
12			Twin No. 1, intracranial haemorrhage	0 days		
13		9	Mother epileptic, prematurity, died on aircraft	4 hours		
14	Sudden Death	1	Sudden death	3 months		
15		2	? Cot death	3 months	6 months	
16		3	? Cot death	? months	10·53%	
17		4	Inhalation of vomitus	11 months		
18	Gastroenteritis	1	Gastroenteritis, parutal abscess, septic lesions, anaemia	8 months		
19		2	Neglect, gastroenteritis	9 months	9 months	
20		3	Repeated admissions, gastroenteritis	5 months	13·16%	
21		4	Gastroenteritis, Inhalation vomitus, hypovolaemic shock	9 months		
22		5	Repeated admissions, gastroenteritis	13 months		
23	Gastroenteritis and Pneumonia	1	Lactose intolerance, Gastroenteritis, Pneumonia	8 months		
24		2	R suppurative otitis, pneumonia, Gastroenteritis, died on aircraft	10 months		
25		3	Exposure, gastroenteritis, Inhalation pneumonia, Dehydration, hyponatraemia	7 months	5 months	
26		4	Septal ventricular defect, tonsillitis, pneumonia, gastroenteritis	4 months	18·41%	6 months
27		5	Neglect, gastroenteritis, pneumonia	1 month		
28		6	Loss of weight, Pneumonia, gastroenteritis	5 months		44·73%
29		7	Pneumonia, gastroenteritis, Thrush	3 months		
30	Pneumonia	1	Pneumonia	4 months		
31		2	Bilateral klebsiella pneumonia	4 months	3 months	
32		3	Pneumonia	? months	13·16%	
33		4	Repeated pneumonia	2 months		
34		5	Post H. influenza meningitis, pneumonia	? month		
35	Others	1	Bowel obstruction	5 months		
36		2	Gonococcal conjunctivitis, meningitis	4 months	6 months	
37		3	Diphtheria	10 months	10·53%	
38		4	Neglect, malnutrition	6 months		

IN MEMORIAM

Rev. Sister Mary Damian Brannigan

Reverend Sister Mary Damian Brannigan, Order of St. John of God, Public Health Field Nurse, Balgo Hills, was fatally injured while on duty on the 18th October, 1973. Sister Damian is sadly missed by all the staff of Community Health Services and her clients.

Sister Damian trained in General Nursing at St. John of God Hospital, Subiaco, from 1952 to 1955 and took up nursing duties at Lombadina Mission in the Kimberley.

(7)—43996

In 1956 and 1957 she worked as a trained nurse in the Native Hospital at Derby and then transferred to the Hospital at Balgo Hills. In 1961 she returned to Derby to nurse in the Leprosarium where she remained until she entered midwifery training at St. John of God Hospital, Subiaco, in 1963.

After gaining her Midwifery Certificate she entered Infant Health training at Ngala and was successful in obtaining her third Certificate.

Sister Damian returned to the Derby Native Hospital as the Matron in February, 1965. In the following year the Native Hospital was abandoned and all the staff and patients were absorbed into the Derby District Hospital where Sister Damian took up her position as Deputy Matron. The merging of the two hospitals was a major event as it was the first time that nuns and lay staff had worked together under the same conditions in a Government Hospital. A great deal of credit is due to Sister Damian for the smoothness with which the combined staff functioned. In 1971 Sister Damian returned to Balgo Hills to nurse on the Mission and joined Community Health Services as a Public Health Field Nurse on 11th August, 1972. She was then 55 years of age and one may only admire the courage with which she tackled her task. Based in Balgo Hills in the desert South of Halls Creek, she covered by Toyota Landcruiser a vast area of rugged sand dune country which included Billiluna, Carungya, Sturt Creek and Lake Gregory.

As a Public Health Field Nurse Sister Damian was second to none—not only in her professional skill as a nurse but in her ability to understand the social and environmental problems of her clients. She was a very great person.

On the road to Derby, near Calwynyardah, the Toyota four wheel drive vehicle left the road and overturned. Sister Damian was found dead as a result of her injuries.

Her funeral was attended by all Community Health Services staff from the Kimberley and Pilbara as well as the Director and Nursing Supervisor from Perth.

A monument is to be erected in her honour at the front of the Community Health Services Regional Headquarters in Derby.

Sister Damian was a good friend, a true nurse, a respected nun and rather a Heroine of the Desert. We pay her tribute.

1973 STATISTICS

The general mid year population of Western Australia rose from 1 053 182 in 1972 to 1 072 406 in 1973. There is no available figures for the increase in Aboriginal population as a separate group. The figures for Aboriginal population in Western Australia in 1973 for the purpose of processing morbidity and mortality rates have been derived by assuming that the percentage increase in Aborigines was the same as that of the general population per 5 year age group.

On this basis the 1972 Aboriginal population figures have been increased by a factor of 1.0182.

ROYAL FLYING DOCTOR SERVICE

VICTORIAN SECTION, KIMBERLEY, W.A.

STATISTICS

	1971/72	1972/73	1973/74
Statute Miles Flown—			
Queen Air	162 716	197 947	202 068
Charter aircraft	63 214	21 686	16 351
Total	225 930	219 633	218 419
Radio Medical Consultations			
Aboriginal	1 291	2 087	1 656
Non-Aboriginal	996	927	715
Total	2 287	3 014	2 371
Consultations by Emergency and Routine Flights—			
Aboriginal	3 876	6 208	4 468
Non-Aboriginal	826	1 250	1 132
Total	4 702	7 458	5 600
Patients to Hospital—			
Aboriginal			
Queen Air	537	646	1 159
Charter	102	43	45
Sub-Total	639	689	1 204
Non-Aboriginal			
Queen Air	216	235	203
Charter	58	19	15
Sub-Total	274	254	218
Total (Aboriginal and Non-Aboriginal)	913	943	1 422

Table 18

1973 W.A. HOSPITAL DISCHARGES RATES PER THOUSAND OF POPULATION BY PRINCIPAL CONDITION

Age Group and Race (Aboriginal and Non-Aboriginal)

I.C.D. Category	Prineipal Condition	AGE GROUP IN YEARS															
		0–4		5–9		10–14		15–19		20–24		25–29		30–34		35–39	
		A	NA	A	NA	A	NA	A	NA	A	NA	A	NA	A	NA	A	NA
000–009	Intestinal Infective Conditions	275·9	....	11·2	....	4·2	....	6·5	....	5·9	....	8·1	....	4·9	....	6·2	....
010–019	Tuberculosis	....	....	....	....	....	....	....	....	....	....	....	....	0·6	....	2·1	....
090–099	Venereal Diseases	1·0	....	0·2	....	0·3	....	3·7	....	3·8	....	3·8	....	3·7	....	3·5	....
120–129	Helmenthiasis	3·6	....	1·7	....	....	....	....	....	....	....	....	....	....	....	....	....
020–089, 100–117, 130–136	Other Infective Conditions	60·3	....	16·9	....	7·9	....	5·4	....	5·1	....	4·9	....	5·5	....	5·5	....
000–139	**Infective and Parasitic**	340·8	31·5	30·1	9·6	12·3	5·1	15·6	5·9	14·8	6·4	16·8	5·7	14·7	4·4	17·3	3·4
140–239	**Neoplasms**	1·2	1·4	1·1	1·1	1·2	1·4	2·7	2·2	2·1	3·2	2·2	3·5	3·7	4·6	3·5	5·9
260–269	Avitaminosis and Nut. Deficiency	30·7	....	....	....	0·5	....	0·3	....	0·9	....	....	....	0·6	....	....	....
240–258, 270–279	Endocrine and Metabolic	1·2	....	0·4	....	1·7	....	1·0	....	3·0	....	3·8	....	4·9	....	8·3	....
240–279	**Endocrine, Metabolic, Nutritional**	31·9	3·6	0·4	0·5	2·2	0·8	1·4	0·8	3·8	1·1	3·8	1·4	5·5	1·8	8·3	2·1
280–289	**Blood and Blood Forming Organs**	9·5	1·4	3·5	1·2	2·0	1·0	1·7	0·4	3·0	0·4	0·5	0·6	2·5	0·5	0·7	0·7
290–315	**Mental Disorders**	4·2	1·3	1·5	0·4	0·7	0·6	6·1	2·4	8·9	4·0	7·6	4·7	17·8	5·4	24·9	6·1
360–379	Diseases of the Eye	25·8	....	10·8	....	3·2	....	2·7	....	1·7	....	3·2	....	4·3	....	4·2	....
380–389	Diseases of Ear and Mastoid	77·3	....	28·5	....	14·8	....	4·4	....	2·5	....	2·2	....	1·2	....	1·4	....
320–358	Other Diseases of Nervous System	5·9	....	3·7	....	4·2	....	6·5	....	8·5	....	9·2	....	14·1	....	14·5	....
320–389	**Diseases Nervous System and Sense Organs**	109·0	15·4	43·0	10·9	22·1	5·2	13·6	3·9	12·7	4·8	14·6	5·4	19·6	6·6	20·1	6·9
390–458	**Diseases of Circulatory System**	0·4	0·3	4·5	0·6	4·4	0·8	1·7	1·1	2·5	2·5	6·5	5·0	11·6	7·5	16·6	11·3
460–519	**Respiratory System**	420·8	69·9	73·9	44·2	38·4	19·3	31·3	16·5	27·5	15·9	34·6	13·6	50·2	13·0	60·8	11·7
520–577	**Digestive System**	14·5	12·0	14·7	16·3	8·1	16·3	11·6	20·3	16·5	22·3	18·4	18·0	22·0	17·0	29·7	17·2
580–629	**Genito-Urinary System**	14·5	5·6	6·5	3·2	5·7	3·0	24·8	10·6	38·9	23·2	36·8	36·0	31·8	37·9	15·9	41·4
630–639, 670–678	Complic of Pregnancy, Puerp and Urinary Infections and Toxaemias	....	....	....	....	....	....	72·0	....	66·3	....	55·6	....	34·1	....	21·9	....
640–645	Abortion	....	....	....	....	1·5	....	11·2	....	20·2	....	12·5	....	8·8	....	10·2	....
650–662	Delivery	....	....	....	....	5·5	....	209·1	....	245·2	....	206·6	....	119·8	....	86·0	....
630–678	**Pregnancy and Childbirth and Puerperium**	....	....	....	....	6·9	0·8	292·3	72·5	331·7	223·7	274·7	222·0	162·7	102·3	118·1	44·4
680–709	**Skin and Subcutaneous Tissues**	64·9	5·5	46·9	3·4	21·9	3·6	16·7	5·8	25·8	6·1	26·0	5·2	26·3	4·6	23·5	4·6
710–738	**Musculoskeletal System**	3·1	1·4	2·8	2·2	3·2	2·7	1·4	5·1	4·2	6·5	6·0	7·4	11·6	9·6	9·0	11·1
740–759	**Congenital Anomalies**	7·6	7·7	3·2	3·0	2·5	2·2	0·3	1·2	0·4	1·0	0·5	0·9	....	0·7	0·7	0·5
760–779	**Perinatal Morbidity**	61·7	30·6	....	....	....	....	....	....	....	....	....	....	....	....	....	....
780–796	**Symptons and Ill-defined Conditions**	93·7	20·6	36·8	10·8	22·4	8·5	27·5	10·7	27·1	12·9	48·7	12·3	39·8	12·1	40·1	13·8
N800–N999	**Accidents, Poisoning, Violence**	72·1	28·9	48·6	21·6	31·2	21·4	68·3	40·7	114·2	38·6	96·8	28·6	118·1	24·0	105·7	22·7
Y00–Y89	**Supplementary Conditions**	29·2	8·9	2·6	3·0	4·7	2·2	30·6	8·7	37·6	19·9	45·4	26·4	30·0	27·6	26·3	23·5
	Total diseharges	6 444	23 387	1 473	13 230	758	9 795	1 169	16 678	1 180	25 439	921	23 383	792	15 789	669	12 533
	Rate of discharge/1 000 population	1229·8	221·1	318·4	132·0	186·5	94·7	397·5	174·5	499·2	274·9	497·8	277·9	484·7	225·5	642·3	204·2
	Total bed days	69 980	110 411	9 457	49 841	5 055	43 525	8 357	92 173	7 634	149 934	6 789	142 820	6 320	98 859	4 958	81 500
	Rate bed days/1 000 population	13355·0	1044·0	2044·3	497·3	1243·5	420·8	2841·6	964·3	3229·3	1620·8	3669·7	1697·3	3867·8	1411·8	3426·4	1328·0
	Population by age group	5 240	105 755	4 626	100 222	4 065	103 438	2 941	95 585	2 364	92 508	1 850	84 144	1 634	70 024	1 447	61 367
	Female population by age group	....	....	....	....	2 016	50 299	1 430	46 436	1 191	44 032	881	39 095	793	33 269	686	29 518
	Deliveries	972	19 538														

I.C.D. Category	Principal Condition	AGE GROUP IN YEARS																	
		40–44		45–49		50–54		55–59		60–64		65–69		70+		Not Stated		All Ages	
		A	NA	A	NA	A	NA	A	NA	A	NA	A	NA	A	NA	A	NA	A	NA
000–009	Intestinal Infective Conditions	3·8	....	8·1	....	3·5	....	4·5	....	4·3	....	17·3	....	13·5	....	0·6	....	54·9	....
010–019	Tuberculosis	3·8	....	2·0	....	2·3	....	3·0	....	2·9	....	1·7	....	2·3	....	0·1	....	0·8	....
090–099	Venereal Disease	....	....	2·0	....	2·3	....	....	....	1·4	....	....	....	1·1	....	0·1	....	1·9	....
120–129	Helmenthiasis	1·0	....	....	....	....	....	....	....	1·4	....	....	....	....	....	....	....	1·0	....
020–089, 100–117, 130–136	Other Infective Conditions	4·7	....	5·1	....	9·3	....	7·5	....	10·1	....	12·1	....	6·8	....	0·2	....	17·7	....
000–139	**Infective and Parasitic**	13·3	3·2	17·2	3·2	17·3	4·4	15·0	3·6	20·2	4·9	31·2	4·9	23·7	8·8	1·0	....	76·2	8·2
140–239	**Neoplasms**	11·4	7·2	4·0	11·4	8·1	13·9	13·5	16·1	10·1	22·8	15·6	32·6	11·3	44·3	0·1	....	3·5	8·0
260–269	Avitaminosis and Nut. Deficiency	1·0	....	....	....	2·3	....	3·0	....	1·4	....	1·7	....	10·2	....	0·1	....	6·2	....
240–258, 270–279	Endocrine and Metabolic	14·2	....	19·2	....	23·1	....	27·0	....	21·6	....	31·2	....	24·8	....	0·1	....	6·1	....
240–279	**Endocrine, Metabolic, Nutritional**	15·2	1·9	19·2	2·8	25·4	3·8	30·0	4·6	23·0	5·8	32·9	6·2	35·0	9·0	0·2	....	12·3	2·5
280–289	**Blood and Blood Forming Organs**	3·8	0·6	2·0	0·8	1·2	1·1	4·5	1·2	1·4	1·8	5·2	1·7	4·5	4·5	....	....	3·7	1·1
290–315	**Mental Disorders**	24·6	5·7	28·3	7·4	13·9	10·4	10·5	9·7	10·1	7·5	12·1	8·8	9·0	8·6	0·2	....	8·4	4·5
360–379	Diseases of the Eye	8·5	....	3·0	....	20·8	....	9·0	....	18·7	....	29·5	....	38·3	....	0·5	....	11·5	....
380–389	Diseases of Ear and Mastoid	1·9	....	2·0	....	1·2	....	3·0	....	2·9	....	1·7	....	....	....	0·1	....	21·3	....
320–358	Other Diseases of Nervous System	17·1	....	17·2	....	6·9	....	12·0	....	2·9	....	8·7	....	11·3	....	0·1	....	7·9	....
320–389	**Diseases Nervous System and Sense Organs**	27·5	6·1	22·2	9·7	28·9	11·4	24·0	11·2	24·5	14·6	39·9	16·8	49·6	22·6	0·7	....	40·6	9·3
390–458	**Diseases of Circulatory System**	33·1	14·0	29·3	18·8	33·5	25·7	25·5	32·6	69·2	45·9	41·6	61·1	41·7	88·6	0·3	....	12·4	14·1
460–519	**Respiratory System**	88·1	10·4	74·7	12·5	78·6	16·6	97·5	26·2	113·8	28·2	97·1	39·3	98·1	51·8	2·2	....	123·7	26·4
520–577	**Digestive System**	35·0	17·5	23·2	21·0	25·4	24·4	21·0	26·4	8·7	29·0	24·3	31·9	11·3	33·5	0·3	....	16·5	19·9
580–629	**Genito-Urinary System**	31·3	34·3	19·2	27·6	16·2	27·6	13·5	16·7	20·2	17·9	13·9	21·5	15·8	24·2	0·4	....	18·6	20·1
630–639, 670–678	Compl. of Pregnancy Puerp. and Urinary Infections and Toxaemias	6·4	....	....	....	....	....	....	....	....	....	....	....	....	....	0·4	....	32·9	....
640–645	Abortion	1·6	....	4·1	....	....	....	....	....	....	....	....	....	....	....	....	....	8·3	....
650–662	Delivery	28·7	....	2·0	....	....	....	....	....	....	....	....	....	....	....	1·5	....	113·9	....
630–678	**Pregnancy and Childbirth and Puerperium**	36·7	11·2	6·1	1·4	....	0·1	....	....	....	....	....	....	....	....	1·9	....	155·1	84·5
680–709	**Skin and Subcutaneous Tissues**	37·9	4·3	32·3	5·1	19·7	6·0	27·0	5·9	20·2	8·5	19·1	7·8	23·7	9·5	0·4	....	35·0	5·4
710–738	**Musculoskeletal System**	12·3	11·0	20·2	12·8	9·3	15·4	28·5	17·6	10·1	18·7	8·7	21·4	10·2	21·4	0·2	....	6·2	8·7
740–759	**Congenital Anomalies**	1·0	0·3	....	0·6	1·2	0·5	....	0·6	....	0·4	1·7	0·5	....	0·5	0·1	....	2·4	1·8
760–779	**Perinatal Morbidity**	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	61·7	30·6
780–796	**Symptons and Ill-defined Conditions**	72·0	13·3	52·5	14·8	33·5	19·4	40·5	17·9	59·1	23·2	69·3	27·4	64·3	40·2	0·8	....	48·7	15·5
N800–N999	**Accidents, Poisoning, Violence**	164·8	20·6	72·7	21·0	61·3	21·9	55·5	21·2	86·5	22·9	62·4	23·2	38·3	37·8	1·8	....	74·2	27·1
Y00–Y89	**Supplementary Conditions**	18·0	16·7	8·1	13·0	15·0	11·4	12·0	9·8	15·9	10·3	15·6	11·4	13·5	9·7	1·1	....	21·6	13·2
	Total Discharges	653	10 869	428	10 649	336	10 346	284	9 546	342	10 030	290	9 796	399	19 607	307	112	16 445	221 189
	Rate of Discharge/1 000 Population	618·4	174·4	431·9	183·1	388·4	213·7	425·8	215·9	492·8	262·7	502·6	316·6	449·8	415·2	10·3	0·1	549·9	212·2
	Total Bed Days	5 225	79 120	3 803	97 216	3 317	92 695	6 426	103 134	4 272	123 635	5 058	135 438	7 945	376 639	3 367	90 095	157 963	1 770 329
	Rate Bed Days/1 000 Population	4 947·9	1 269·3	3 837·5	1 672·0	3 834·7	1 914·8	9 634·1	2 332·6	6 155·6	3 238·0	8 766·0	4 376·6	8 957·2	7 975·4	112·6	86·4	5 282·3	1 698·2
	Population by Age Groups	1 056	62 336	991	58 144	865	48 411	667	44 214	694	38 183	577	30 946	887	47 225			29 904	1 042 502
	Female Population by Age Group	627	29 133	489	27 551	403	23 822											8 516	323 155

Table 20

W.A. HOSPITALS AGE DISTRIBUTION OF ABORIGINES DISCHARGED 1973 BY PRINCIPAL CONDITION

Males

I.C.D. Category	Principal Condition	Age Groups															Not Stated	Total all Ages
		0–4	5–9	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70+		
000–136	Infective and Parasitic	988	69	30	13	11	8	9	8	8	7	8	6	12	10	13	9	1 209
140–239	Neoplasms	2	3	3	....	1	....	2	1	2	....	1	4	3	7	5	1	35
240–279	Endocrine, Nutritional, Metabolic	74	2	4	....	7	1	3	3	5	8	7	9	5	9	16	1	154
280–289	Blood and Blood Forming Organs	29	11	3	2	....	....	3	....	1	....	....	....	....	2	2	....	53
290–315	Mental Disorders	11	6	1	5	9	6	13	20	19	21	7	6	2	7	4	6	143
320–389	Nervous System and Sense Organs	315	109	48	10	16	10	12	12	20	17	6	9	8	14	30	7	643
390–458	Circulatory System	5	7	7	1	2	7	8	12	26	15	12	16	25	15	18	6	182
460–519	Respiratory System	1 282	191	80	42	24	24	31	34	33	34	44	35	44	34	51	36	2 019
520–577	Digestive System	50	29	19	10	17	10	19	19	20	14	12	8	3	3	7	1	241
580–629	Genito-Urinary System	50	14	7	11	14	11	4	1	5	5	3	2	9	2	6	1	145
630–678	Pregnancy and Childbirth	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
680–709	Skin and Subcutaneous Tissues	184	125	37	20	39	22	26	22	20	15	9	10	8	7	8	8	560
710–738	Musculoskeletal System	10	9	8	1	5	6	16	8	6	13	5	9	4	3	4	1	108
740–759	Congenital Anomalies	26	5	6	....	1	....	....	....	1	....	....	....	....	1	....	1	41
760–779	Perinatal Morbidity	38	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	38
780–796	Symptoms and Illdefined Conditions	269	84	41	24	18	34	24	31	38	23	12	20	20	23	34	11	706
N800–N999	Accidents, Poisoning, Violence	203	132	78	128	127	95	85	64	94	36	21	18	33	16	13	22	1 165
Y00–Y89	Supplementary Classifications	98	2	10	7	2	6	1	4	6	4	4	4	3	6	5	7	169
	Total Males	3 634	798	382	274	293	240	256	239	304	212	151	156	179	159	216	118	7 611

Table 21

W.A. HOSPITAL AGE DISTRIBUTION OF ABORIGINES DISCHARGED 1973 BY PRINCIPAL CONDITION

Females

I.C.D. Category	Principal Condition	Age Groups																Total all Ages
		0–4	5–9	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70+	Not Stated	
000–136	Infective and Parasitic	798	70	20	33	24	23	15	17	6	10	7	4	2	8	8	21	1 066
140–239	Neoplasms	4	2	2	8	4	4	4	5	10	4	6	5	4	2	5	1	70
240–279	Endocrine, Nutritional, Metabolic	93	....	5	4	2	6	6	9	11	11	15	11	11	10	15	5	214
280–289	Blood and Blood Forming Organs	21	5	5	3	7	1	1	1	3	2	1	3	1	1	2	....	57
290–315	Mental Disorders	11	1	2	13	12	8	16	16	7	7	5	1	5	....	4	1	109
320–389	Nervous System and Sense Organs	256	90	42	30	14	17	20	17	9	5	19	7	9	9	14	14	572
390–458	Circulatory System	1	15	11	4	4	5	12	16	16	18	17	6	23	16	19	5	188
460–519	Respiratory System	924	146	76	50	50	44	51	54	60	40	24	30	35	22	36	30	1 672
520–577	Digestive System	26	35	14	24	22	24	17	24	17	9	10	6	3	11	3	7	252
580–629	Genito-Urinary System	26	16	16	62	78	57	48	22	28	14	11	7	5	6	8	10	414
630–678	Pregnancy and Childbirth	....	....	14	418	395	242	129	81	23	3	....	....	....	....	....	16	1 321
680–709	Skin and Subcutaneous Tissues	156	92	52	29	22	26	17	12	20	17	8	8	6	4	13	3	485
710–738	Musculoskeletal System	6	4	5	3	5	5	3	5	7	7	3	10	3	2	5	4	77
740–759	Congenital Anomalies	14	10	4	1	....	1	....	1	....	....	1	....	....	....	....	....	32
760–779	Perinatal Morbidity	22	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	22
780–796	Symptoms and Illdefined Conditions	222	86	50	57	46	56	41	27	38	29	17	7	21	17	23	13	750
N800–N999	Accidents, Poisoning, Violence	175	93	49	73	115	84	108	89	81	36	32	19	27	20	21	33	1 055
Y00–Y89	Supplementary Classifications	55	10	9	83	87	78	48	34	13	4	8	4	8	3	7	26	478
	Total Females	2 810	675	376	895	887	681	536	430	349	216	185	128	163	131	183	189	8 834
	Total Males and Females	6 444	1 473	758	1 169	1 180	921	792	669	653	428	336	284	342	290	399	307	16 445

Table 22

1973 W.A. HOSPITAL DISCHARGES OF ABORIGINES BY AGE AND PRINCIPAL CONDITION

I.C.D. Category	Principal Condition	Days		Months		Years	Total Years
		1–6	7–30	1–5	6–11	1–4	0–4
000–009	Intestinal Infections	2	14	307	413	710	1 446
010–019	Tuberculosis	....	....	....	....	....	....
090–099	Venereal Disease	....	1	1	....	3	5
120–129	Helmenthiasis	....	....	....	....	19	19
020–089 100–117 130–136	Other Infective Conditions	1	6	43	70	196	316
000–139	**Infective and Parasitic**	3	21	351	483	928	1 786
140–239	**Neoplasms**	....	1	3	1	1	6
260–269	Avitaminosis and Nutritional Deficiency	6	19	61	34	41	161
240–258 270–279	Endocrine and Metabolic	....	....	1	1	4	6
240–279	**Endocrine, Nutritional, Metabolic**	6	19	62	35	45	167
280–289	**Blood and Blood Forming Organs**	....	....	3	10	37	50
290–315	**Mental Disorders**	....	1	10	2	9	22
350–379	Diseases of the Eye	1	5	23	20	86	135
380–389	Diseases of the Ear and Mastoid	....	....	23	73	309	405
320–358	Other Diseases of the Nervous System	1	....	9	9	12	31
320–389	**Diseases of Nervous System and Sense Organs**	2	5	55	102	407	571
390–458	**Circulatory System**	....	....	1	....	5	6
460–519	**Respiratory System**	2	31	410	492	1 270	2 205
520–577	**Digestive System**	....	....	11	19	46	76
580–629	**Genito-Urinary System**	2	....	8	5	61	76
680–709	**Skin and Sub-cutaneous Tissues**	1	5	26	38	270	340
710–738	**Musculoskeletal System**	....	....	....	3	13	16
740–759	**Congenital Anomalies**	8	4	14	8	6	40
760–796	**Perinatal Morbidity**	25	24	8	3	....	60
780–796	**Symptoms and Ill-defined Conditions**	2	6	75	95	174	491
N800–N999	**Accidents, Poisoning, Violence**	....	4	18	30	326	378
Y00–Y89	**Supplementary Classifications**	21	14	32	25	61	153
	Discharge Totals—						
	Age 1–6 days	72					
	7–30 days		135				
	1–5 months			1 087			
	6–11 months				1 351		
	1 year					1 753	
	2 years					953	
	3 years					585	
	4 years					508	
						3 799	
	Discharges Grand Total						6 444
	Bed Days Totals—						
	Age 1–6 days	2 380					
	7–30 days		1 619				
	1–5 months			14 105			
	6–11 months				15 576		
	1 year					19 096	
	2 years					8 575	
	3 years					4 830	
	4 years					3 799	
						36 300	
	Bed Days Grand Total						69 980

Table 23

RATIO OF ABORIGINAL TO NON-ABORIGINAL WESTERN AUSTRALIAN HOSPITALS DISCHARGES 1973 PER 1 000 POPULATION BY AGE GROUPS AND PRINCIPAL CONDITION

I.C.D. Category	Prineipal Condition	Age Groups														Totals		
		0–4	5–9	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70+	1973	1972	1971
000–136	Infective and Parasitie	10·8	3·1	2·4	2·6	2·3	3·0	3·3	4·9	4·2	5·3	3·9	4·2	4·1	6·4	2·7	9·3	9·7	12·3
140–239	Neoplasms	0·9	1·0	0·9	1·2	0·7	0·6	0·8	0·6	....	0·4	0·6	0·8	0·4	0·5	0·3	0·4	0·4	0·3
240–279	Endocrine, Nutritional, Metabolie	8·9	9·0	2·8	1·8	3·5	2·7	3·1	3·9	8·0	6·9	6·7	6·5	3·9	5·3	3·9	4·9	4·3	4·5
280–289	Blood and Blood Forming Organs	6·8	2·9	2·0	4·3	7·5	0·8	5·0	1·0	6·3	2·5	1·1	3·7	0·9	3·1	1·0	3·4	4·2	2·9
290–315	Mental Disorders	3·2	3·8	1·2	2·5	2·2	1·6	3·3	4·1	4·3	3·8	1·3	1·1	1·4	1·4	1·1	1·9	1·4	1·3
320–389	Nervous System and Sense Organs	7·1	3·9	4·3	3·5	2·7	2·7	3·0	2·9	4·5	2·3	2·5	2·1	1·7	2·4	2·2	4·4	4·7	5·1
390–458	Circulatory System	1·3	7·5	5·5	1·6	1·0	1·3	1·6	1·5	2·4	1·6	1·3	0·9	1·5	0·7	0·5	0·9	0·9	0·9
460–519	Respiratory System	6·0	1·7	2·0	1·9	1·7	2·5	3·9	5·2	8·5	6·0	4·7	3·7	4·0	2·5	1·9	4·7	5·2	4·9
520–577	Digestive System	1·2	0·9	0·5	0·6	0·7	1·0	1·3	1·7	2·0	1·1	1·0	0·8	0·3	0·8	0·3	0·8	0·8	0·8
580–629	Genito-Urinary System	2·6	2·0	1·9	2·3	1·7	1·0	0·8	0·4	0·9	0·7	0·6	0·8	1·1	0·7	0·7	0·9	0·9	0·9
630–678	Pregnancy and Childbirth	....	....	8·6	4·0	1·5	1·2	1·6	2·7	3·3	4·4	....	....	....	....	....	1·8	1·8	1·8
680–709	Skin and Subcutaneous Tissue	11·8	13·8	6·1	2·9	4·2	5·0	5·7	5·1	8·8	6·3	3·3	4·6	2·4	2·5	2·5	6·5	6·3	7·1
710–738	Musculoskeletal System	2·2	1·3	1·2	0·3	0·7	0·8	1·2	0·8	1·1	1·6	0·6	1·6	0·5	0·4	0·5	0·7	0·8	0·9
740–759	Congenital Anomalies	1·0	1·0	1·1	0·3	0·4	0·6	....	1·4	3·3	....	2·4	....	....	3·4	....	1·3	1·2	1·2
760–779	Perinatal Morbidity	2·0	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2·0	1·8	2·3
780–796	Symptoms and Illdefined Conditions	4·6	3·4	2·6	2·6	2·1	4·0	3·3	2·9	5·4	3·6	1·7	2·3	2·6	2·5	1·6	3·1	3·2	3·8
N800–N999	Accidents, Poisoning, Violence	2·5	2·3	1·5	1·7	3·0	3·4	4·9	4·7	8·0	3·5	2·8	2·6	3·8	2·7	1·0	2·7	2·7	2·8
Y00–Y89	Supplementary Classifications	3·3	0·9	2·1	3·5	1·9	1·7	1·1	1·1	1·1	0·6	1·3	1·2	1·5	1·4	1·4	1·6	1·7	1·4
	Total 1973	5·6	2·4	2·0	2·3	1·8	1·8	2·2	2·3	3·6	2·4	1·8	2·0	1·9	1·6	1·1	2·6	....	....
	1972	5·9	2·5	2·0	2·5	1·8	1·7	1·8	2·4	2·3	2·0	2·2	1·9	2·0	1·5	1·0	....	2·6	....
	1971	6·1	2·6	2·4	2·2	1·7	1·9	2·4	2·6	2·4	2·1	2·1	2·1	1·9	1·4	1·1	....	....	2·7

Table 24

1973 W.A. HOSPITAL DISCHARGE RATES PER THOUSAND ABORIGINAL POPULATION BY PRINCIPAL CONDITION AND GEOGRAPHIC REGION

I.C.D. Category	Principal Condition	State Non-Aboriginal	State Aboriginal	Kimberley Region	Pilbara Region	Northwest Region	E. Goldfields Region	Southwest Region	Metropolitan Region
000–136	Infective and Parasitic	8·2	76·2	76·4	49·0	86·7	104·5	107·0	38·8
140–239	Neoplasms	8·0	3·5	3·5	3·2	5·1	1·6	3·0	2·5
240–279	Endocrine, Nutritional, Metabolic	2·5	12·3	11·8	11·7	17·5	10·1	18·4	3·3
280–289	Blood and Blood Forming Organs	1·1	3·7	4·9	2·1	2·7	5·8	4·3	1·8
290–315	Mental Disorders	4·5	8·4	4·2	4·3	8·1	11·7	13·7	6·3
320–389	Nervous System and Sense Organs	9·3	40·6	32·5	25·3	27·7	57·4	69·0	21·7
390–458	Circulatory System	14·1	12·4	13·0	15·2	9·8	13·6	17·3	5·1
460–519	Respiratory System	26·4	123·7	92·5	73·7	119·7	169·0	219·4	47·9
520–577	Digestive System	19·9	16·5	14·3	5·6	22·9	15·6	25·2	21·7
580–629	Genito-Urinary System	20·1	18·6	20·3	15·2	24·3	14·9	22·9	13·7
630–678	Pregnancy and Childbirth	84·5	155·1	149·2	113·1	183·4	261·9	144·5	167·1
680–709	Skin and Subcutaneous Tissue	5·4	35·0	36·2	20·8	42·8	52·6	54·7	10·9
710–738	Musculoskeletal	8·7	6·0	6·7	5·1	10·5	4·5	7·5	3·3
740–759	Congenital Anomalies	1·8	2·4	3·2	1·3	1·4	1·9	3·7	3·0
760–779	Perinatal Morbidity	30·6	61·7	39·0	82·0	10·4	20·0	126·0	37·8
780–796	Symptoms and Illdefined Conditions	15·5	48·7	31·5	32·7	57·7	35·0	91·1	13·0
N800–N999	Accidents, Poisoning, Violence	27·1	74·2	67·3	44·7	81·6	94·0	108·0	44·0
Y00–Y89	Supplementary Classifications	13·2	21·6	38·8	23·4	26·0	13·6	14·9	9·3
	Total	212·2	549·9	492·7	368·0	597·8	666·7	927·2	265·9
	Aboriginal Population		29 904	7 132	3 758	2 965	3 082	7 288	5 678
	Female Population 10–55 years		8 516	2 031	1 070	845	878	2 076	1 616
	Deliveries		972	231	122	96	100	238	185

Table 25

RATES PER THOUSAND OF POPULATION OF PATIENT DAYS SPENT IN W.A. HOSPITALS IN 1973 BY RACE AND PRINCIPAL CONDITION

I.C.D. Category	Principal Condition	Aboriginal Bed days 1 000 pop.	Non-Aborig. Bed days 1 000 pop.	Ratio A/NA Bed days 1973	Ratio A/NA 1972	Ratio A/NA 1971
000–136	Infective and Parasitic	1 052·8	54·7	19·3	18·1	18·0
140–239	Neoplasms	53·9	105·2	0·5	0·7	0·5
240–279	Endocrine, Nutritional, Metabolic	197·7	32·7	6·1	4·9	6·8
280–298	Blood and Blood Forming Organs	39·8	9·5	4·2	3·5	5·0
290–315	Mental Disorders	75·7	59·9	1·3	0·7	0·6
320–389	Nervous System and Sense Organs	428·1	68·2	6·2	7·1	6·1
390–458	Circulatory System	192·1	214·7	0·9	1·2	0·8
460–519	Respiratory System	1 033·3	160·7	6·4	7·2	6·3
520–577	Digestive System	131·3	152·8	0·9	1·0	0·9
580–629	Genito Urinary System	153·6	120·9	1·3	1·2	1·4
630–678	Pregnancy and Childbirth	1 387·4	618·3	2·2	1·8	1·6
680–709	Skin and Subcutaneous Tissues	294·4	36·5	8·1	7·4	7·6
710–739	Musculoskeletal System	83·6	100·4	0·8	0·8	0·7
740–759	Congenital Anomalies	42·9	17·4	2·5	3·1	2·2
760–779	Perinatal Morbidity	1 387·9	438·1	3·2	5·4	5·7
780–796	Symptoms and Illdefined Conditions	310·9	114·9	2·7	2·9	4·2
N800–N999	Accidents, Poisoning, Violence	533·5	204·5	2·6	2·6	4·5
Y00–Y89	Supplementary Conditions	218·2	45·3	4·8	4·3	2·2
	Total	5 282·3	1 698·2	3·1	3·1	3·0

Maternal Mortality

In 1973 there were four maternal deaths in the State of which one was an Aboriginal. In 1972 the ratio was one in three.

REPORTS

Reports were received from all field staff in 1973.

CONCLUSION

I wish to thank all members of the staff for their unstinted help and support during the year and also all other people and organisations who contributed to Community Health.

In particular, Sir, since this is the last time you will receive my Annual Report, I wish to express my appreciation for the years of sound advice which you have extended to me, for your unfailing patience and for the great advances you have instituted in the interests of the health of the public.

Appendix VII

Annual Report 1973
Child Health Services

Director : Dr. R. W. Roberts M.B. B.S., F.R.A.C.G.P., D.C.H.

Senior Medical Officer : Dr. T. S. Parry M.B. B.S., M.R.A.C.P., D.P.H., D.C.H.

Supervising Sister : Mrs H. Jury S.R.N.

Deputy Supervisor : Miss N. Chidlow S.R.N., Dip.Pub.Hlth. Nsg. A.C.N.A.

INTRODUCTION

1973 has seen many changes in the staffing of this Service. Dr. Carruthers, our former Director, was with us for only six months, as he took over the responsibilities of Deputy Commissioner of Public Health in May. I would like to take this opportunity of expressing my appreciation for the solid base of administrative structure which he left behind him. His guidance and assistance have been invaluable.

We have seen gradual progression in the association of the work of both the Child Health and School Health sectors of our Service. This has been assisted greatly by the conducting of weekly meetings of the senior staff of each service, with benefit to all.

The fields of activity of the service have broadened, due to the increased activity in the welfare sector by the Australian Government. This has meant a lot of work and research in the various fields, has involved co-operation and working together with the other service departments (i.e. Education and Welfare) and has been of benefit to all concerned. I shall report further on this later in the report.

1973 marked the Golden Jubilee year of the Child Health Service, and allowed us to mount a special staff Refresher Course involving not only our own staff but also representatives of Child Health Services from all other States. This activity was a great success and we hope heralds closer co-operation between the various State Child Health Services in the future.

STAFF

There have been several changes in the senior medical staff. As already noted, Dr. Carruthers has left us. Dr. Thomas, the Senior Medical Officer in School Health has retired and there has been one resignation from the Medical Staff in the Service. Dr. Parry, an expert in the field of handicapped children and developmental assessment, has joined us and will be of inestimable value, both in the provision of expertise and the training of staff. The position of Senior Medical Officer, School Health is vacant, but we hope that this position will be filled early in 1974.

The appointment of a Supervising Sister to the School Health Service in 1973 has been of immense value. Sister Deane, an experienced worker in the Child Health, School Health and School Welfare divisions, has added strength to the School Health sector.

On the nursing side, new awards which have brought the conditions of service closer to those existing in Hospitals in the State, have assisted in our recruitment. Table 1 shows the movement in Child Health Centre staff, revealing a net gain of five in 1973.

Table 1

Staff	Full Time	Part Time	Total
Separations	24	7	31
Additions	25	11	36
Net gain (loss)	1	4	5
Nursing staff 31/12/1973	95	14	....

The staffing position as far as nurses are concerned in the school Health Service is satisfactory. This field of work is a popular one, due mainly to the hours of work, and recruitment of suitable staff is not difficult. Our expansion into the field of providing nurses attached to individual schools has meant that many enquiries concerning these positions have been forthcoming. There should be no difficulty in recruitment in this area.

VITAL STATISTICS

Table 2

Western Australian Statistics (1973)

	Perth Statistical Division	Rest of State	Whole State
Births			
Live births			
Number	13 307	7 203	20 510
Rate per 1 000 population	18·00	21·88	19·12
Ex-nuptial			
Number	1 295	1 202	2 497
% of live births	9·73	16·69	12·17
Stillbirths (born after 20 weeks gestation)			
Number	173	97	270
Rate per 1 000 total births	12·83	13·29	12·99
Deaths			
Infant deaths (aged under 1 year)			
Number	213	181	394
Rate per 1 000 live births	16·01	25·13	19·21
Neo-natal deaths (aged under 28 days)			
Number	156	108	264
Rate per 1 000 live births	11·72	14·99	12·87
Perinatal deaths (Stillbirths and neo-natal deaths)			
Number	329	205	534
Rate per 1 000 total births	24·72	28·46	26·04

The infant mortality rates for the past 5 years are shown in Table 3. 1973 shows a reversal of the trend in improvement in these figures, and highlights, I feel, the necessity for a Perinatal Mortality Committee to investigate the causes of such statistical changes and plan remedies.

Table 3

Infant Mortality in Western Australia—1969–1973

Year	Perth			Rest of State			Whole State		
	Live Births	Inf. Deaths	I.M. Rate	Live Births	Inf. Deaths	I.M. Rate	Live Births	Inf. Deaths	I.M. Rate
1969	13,094	240	18·3	7,600	213	27·8	20,754	453	21·8
1970	13,908	251	18·0	7,710	208	27·0	21,618	459	21·2
1971	15,843	269	17·0	8,396	195	23·2	24,239	464	19·1
1972	14,400	188	13·1	7,777	160	20·6	22,177	348	15·7
1973	13 307	213	16·0	7 203	181	25·1	20 510	394	19·2

Table 4 shows a persistence of the unsatisfactory position in that more than 25% of all infant deaths are still occurring after 28 days.

Table 4

Neo-natal deaths as a percentage of Total Infant Deaths 1969–1973

Year	Perth Statistical Division	Rest of State	Whole State
1969	81·5	60·0	71·0
1970	74·9	61·0	63·5
1971	69·0	61·5	65·6
1972	72·3	59·4	66·4
1973	73·2	59·7	67·0

CHILD HEALTH CLINICS

The rapid expansion of housing projects, particularly in the outer suburbs of Perth and in the mining areas in the North West, has meant an increase in the number of new clinics being erected. Following the trend of recent years, most of these have been associated with Kindergartens. This has been particularly so in the northern corridor development along the coast towards Yanchep. We expect even more activity in this area in the near future, particularly in the State Housing developments, where there is a great need for support in the child health field.

The new clinics opened in 1973 were Port Hedland, East Carnarvon, Kambalda, Greenwood, Duncraig, Craigie and Wanneroo. The staffing for the north west clinics presents difficulties as the living conditions and facilities are not ideally suited for single women, and the wage loading is below that of the private sector in the areas concerned. These problems are receiving constant attention.

Table 5 shows the number, nature and distribution of clinics throughout the State in 1973.

Table 5

Child Health Clinics

Centre buildings—Metropolitan		111
Country		80
Caravans		2
Mobile Units (Cannington and Belmont)		2

Table 6 is a summary of the work done in Clinics during the past four years.

Table 6

Work in Child Health Clinics 1970–1973

	1970	1971	1972	1973
Birth notification received	19 897	22 227	19 184	18 034
Births registered	21 618	24 239	22 177	20 780
Gross attendances	273 368	276 056	273 226	254 545
Individuals attending				
Under 1 year	24 834	26 406	24 785	24 746
1–2 years	6 195	9 651	11 088	11 512
Over 2 years	8 991	5 870	7 293	7 537
Total	40 020	41 927	43 166	43 795
Home visits	31 375	31 697	33 343	32 598
Telephone consultations	27 063	26 957	28 984	29 444
Hospital visits	19 919	17 569	18 909	18 013
Hearing tests	9 049	10 895	12 154	11 870
Failed to pass	58	76	109	84
Vision tests	1 408	1 015	1 621	1 455
Failed to pass	61	35	57	66
Urine tests	20 383	22 471	17 919	16 830
Number of Expectant Parent Classes	576	442	533	710

SCHOOL HEALTH SERVICE

School Health Services throughout the world are undergoing great changes since their inception at the beginning of this century, and we must meet the challenge of these changes.

A substantial minority of children examined routinely at school entry or selectively later have medical conditions that effect, or might effect, their development in education. These include defects of hearing or vision, physical deformity, asthma, epilepsy, speech and language or emotional and behaviour disorders which may or may not be already known and under medical care. The purpose of the service is not merely to record such defects but to ensure that their impact on the child's education is as minimal as circumstances allow. This requires increased expertise, a more rational use of the special skills of our staff and a closer working relationship with other health professionals in this field i.e. General Practitioners, Guidance Officers, Remedial Teachers etc.

The recent addition to our staff of a Senior Medical Officer for Handicapped Children and a highly qualified Nursing Supervisor will assist in the planning and carrying out of these changes in priorities. The extension of work from the screening field into the assessment area has meant the necessity for redeployment of our staff arrangement. It is intended to conduct a pilot scheme in 1974 in which the nursing staff carry out the physical screening component, leaving the more careful assessment in depth, including parent interview, to the Medical Practitioner. Results of this project are awaited with interest, as it could effect considerably our work throughout the State.

The value of the attachment of a trained nurse in Belmont Senior High School has been proven, and plans for expansion of this service in 1974 have been laid with the Education Department. The main problems are for the provision of adequate physical facilities for the nurse to work in, and some difficulties have arisen in this regard. It is intended that the nurses will be employed and supervised by the School Health Service, remaining outside the administrative structure of the Education Department. This is considered important, both from the point of view of impartiality in the dealing with the problems of the school child, and in the provision of in-service training programmes for these personnel.

The projected release of medical personnel from the routine screening procedures in schools will allow, it is hoped, their participation and involvement in work at Teachers Training Colleges. It is realized that the School Health Service has a role in health education, and this involvement in Teachers Colleges is considered the most appropriate field in this regard.

Table 7 shows the number of schools visited in 1973.

Table 7

Schools etc. visited by School Health Teams in 1973

Kindergartens	Child Care Centres	Primary Schools	Secondary (including Junior High) Schools
208	50	426	84

As can be seen, there is an increase in the number of kindergartens visited and we can anticipate a rapid expansion in this field. This is commented on below.

Table 8

Examinations by School Medical Officers 1973

	Metropolitan			Country			Whole State		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Examined	14 357	12 206	26 563	4 214	3 627	7 841	18 571	15 833	34 404
Referred for Medical Attention	1 797	1 494	3 291	598	539	1 137	2 395	2 033	4 428
Referred for Home Attention	780	367	1 147	246	96	342	1 026	463	1 489
Referred for Dental Attention	721	611	1 332	232	185	417	953	796	1 749
Total Referrals	3 298	2 472	5 770	1 076	820	1 896	4 374	3 292	7 666

Table 9

Reasons for Referrals for Medical Attention 1973

Type of Medical Attention	Metropolitan			Country			Whole State		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Vision	868	761	1 629	178	221	399	1 046	982	2 028
Hearing	386	266	652	150	104	254	536	370	906
Other	543	467	1 010	270	200	470	813	667	1 480
Total	1 797	1 494	3 291	598	525	1 123	2 395	2 019	4 414

8 803 pre-school children were examined (8 360 in 1972) and of these 1 206 were referred for further attention as shown in Table 10.

Table 10

Examinations by School Medical Officers (*Pre-School*) 1973

	Whole State		
	Male	Female	Total
Examined	4 721	4 082	8 803
Referred for Medical Attention	419	312	731
Referred for Home Attention	115	119	234
Referred for Dental Attention	130	111	241
Total Referrals	664	542	1 206

As stated previously, there is envisaged a rapid expansion in the work in the pre-school field. Australian Government support in this field will mean the establishment of a larger number of pre-school education and day care centres throughout the State, and there will be a demand for School Health involvement in this field. Indeed I regard this activity as a very important one, as the earlier a child is screened and assessed for handicaps to learning, the more effective will be the management. This will almost inevitably involve an increase in staff establishment, and may involve the re-establishment of a specialized pre-school service, which was absorbed into the general field of school health screening some years ago.

(8)—43996

CHILD HEALTH CORRESPONDENCE SECTION

This valuable contribution to family health care in the remote areas continues. It is staffed by Child Health Sisters at Rheola Street Headquarters and an attempt is made to visit the mothers who use this service on an annual basis when the sisters travel to these remote areas, either by car, train or plane.

Table 11 gives a summary of the work carried out by this section and illustrates the wide diversity of its activities.

Table 11

Child Health Correspondence Service

Birth Notifications received	1 211
New babies registered with Child Health Service	938
Requests for advice received (re children up to 2 years)	9 079
Requests for advice re Pre-school children	1 670
Requests for advice re Expectant Mothers	138

Country visitors to Centre (West Perth)

Babies	259
1–2 years	64
Pre-school	77
Expectant Mothers	18
School children	5

Trips

Trans Australian Railway—3 visits
Country Itineraries—5 plus emergency visit to Cue

Covering

Cue	Marble Bar	Nullagine	Roy Hill
Ethel Creek	Meekatharra	Payne's Find	Warburton Mission
Exmouth	Mount Goldsworthy	Port Hedland	Wittenoom
Jigalong	Mount Magnet	Outlying stations	Yalgoo
	Mount Newman	Rottnest Island	

Exmouth transferred from Correspondence to Carnarvon Sister in April.

EDUCATION

This section deals with the problem of preparation of children and young married couples for parenthood, as it is realized that is a vital aspect of education which has assumed increasing importance with the break up of the "extended family" and the almost universal replacement by the " nuclear family ".

The work has extended to :

1. *Primary Schools.* This section deals mainly with primary school children in remote areas, particularly amongst aboriginal populations. Table 12 shows the utilization of this service for 1972 and 1973.

Table 12

Mothercraft and Fathercraft Correspondence Lessons

	1972	1973
Mothercraft	821	761
Fathercraft	411	343
Adults	49	38
Number of Lessons (Total)	20 696	21 696

Parenthood Course for High School Children

1972			1973		
Girls	Boys	Total	Girls	Boys	Total
1 624	579	2 203	1 821	1 275	3 096

Schools involved 22

One day intensives for teachers 11

2. *High Schools.* The work in this field is shown in Table 12 showing the utilization in 1972 and 1973. The emphasis in the High School sector is on involvement of teachers, who attend our Headquarters at Rheola Street for a one day intensive exposure to our methods of work in this field.

3. *Expectant Parents.* As can be seen from Table 13, this is a rapidly expanding service. The figures illustrate the increasing demand by the young expectant parents for guidance in the future care of their young children. Plans for further expansion of this section in 1974 are underway.

Table 13

Expectant Parents

1972		1973	
Classes	Attendances	Classes	Attendances
533	4 827	710	6 622

Sisters involved.	1972	City—3	Country—9
	1973	City—5	Country—14

The whole field of health education is to be examined in 1974 by all institutions involved in this field. This has been initiated by our former Director, Dr. K. J. M. Carruthers, and will involve the Education Department, the Teachers Colleges, the Health Education Council, the Community Development Centre, representatives from Independant Schools and our Service. The report and recommendations of this top level enquiry into the field of health education is awaited with interest, as it will effect the work of this service in this vital activity in the future.

GENERAL REMARKS

1973 has seen the beginnings of a broadening of our activities in the field of child health and child care. The increased emphasis on welfare services in Australia has meant our involvement in fields of endeavour associated with :

1. *The Education Department.* With the expansion of work in disadvantaged schools, as recommended in the Karmel Commission Report to the Australian Government, there has been a re-examination of the health aspects of such work. This has meant a great deal of research activity in this field.

2. *Pre-school education and Day Care.* Australian Government assistance in this field has meant a re-examination of the health aspects of pre-school children in day care. It is realized that this group of children are particularly vulnerable to neglect and ill health and there will be an increasing involvement with the Pre-school Education Board, which has direct and permanent representation from our Service at a top level.

3. *Princess Margaret Hospital.* The increasing emphasis on develpmental assessment in child health has led to the establishment of an Assessment Clinic for handicapped children at Princess Margaret Hospital. Dr. T. Parry our Senior Medical Officer for Handicapped Children is heavily involved in this. This has meant an even closer liaison with Princess Margaret Hospital which can only be for the good.

4. *Mental Deficiency Division.* Two of our Medical staff are involved on a part time basis with the work of Irrabeena Assessment Centre for Mental deficiency. This again has meant close co-operation with this division.

5. *Handicapped children.* It has become apparent that the establishment of a State Assessment Clinic for children with handicaps, to which the general public has access either through medical practitioners, clinic sisters, guidance officers (Education Department) etc., is required. 1974 should see some positive action in this regard.

Considerable consultation has taken place within the Service on the definition of the role of the service in this changing society in which we live. The closer understanding, co-operation and even possible integration of curative and preventive care is, I am sure, a future need. I hope to contribute towards this in the years to come.

The provision of quality care in an expanding field of Child Health necessitates the provision of increasing numbers of trained personnel. To obtain this, an educational programme of training both prior to entry into the service, and as an on-going in-service commitment, is necessary. With this end in view, much thought and effort was put into the provision of extra educational and orientation experience in 1973—particularly in the School Health aspect.

Training of nursing staff for work in the community is currently being examined carefully by the Nurses Registration Board, the College of Nursing and other interested community services (including our own). This will almost certainly lead to changes in the future, and we shall be vitally concerned with the outcome of this planning. 1974 should see developments which will affect our Service in this regard, particularly in the responsibility of provision of training experiences for nurses in training (both undergraduate and post-graduate).

In conclusion I cannot do better than quote from Dr. Howard Williams who wrote on perspectives in medical practice and education (Australian Paediatric Journal):

" What can be done to meet future needs ? There are four important factors in understanding the relationship and possible integration of curative and preventive care.

First, the pattern and distribution of illness in the community is such that few children need consultant advice and hospital care, a greater number require the skill and advice of the general practitioner, while the largest number need the advice of the infant and child health nurse.

Second, the incidence, morbidity and mortality of almost all illness is greatly increased in the families in the poor compared with the better socio-economic group.

Third, the mother is the most important person in preventing illness and giving simple curative care and the health of the child will primarily depend on the quality of her care.

Fourth, in preventive and curative care, each of four groups, the consultant, general practitioner, health nurse and mother has a defined role and each must know and understand the responsibilities of the other ".

I trust that we can keep these ideas to the forefront in our work. As stated by Dr. Carruthers in his report of last year, we must look to quality as well as expansion in our future work. The future is indeed an exciting one and we trust that by our activities we will attract high quality staff to give a high quality service to a satisfied public in this field.

Appendix VIII

Pharmaceutical Services Branch

W. M. Griffiths, B. Pharm., F.P.S. (G.B.), M.P.S.
Chief Pharmacist

This branch carries out the day-to-day administration of the Poisons Act, Poisons Act Regulations, therapeutic goods requirements under the Health Act, Pesticides Regulations and supervises functions of pharmaceutical services in Western Australian Government Hospitals and institutions.

Poisons Act and Regulations

Controls were applied to use of Hexachlorophene, and to the supply of methaqualone and pentazocine, on the advice of the Poisons Advisory Committee and the National Health and Medical Research Council.

A voluntary computer based monitoring scheme was successfully instituted with the co-operation of the manufactures to determine areas of use of pentazocine and prevent its dispersion to illicit dealers.

Poisons Advisory Committee

The Poisons Advisory Committee held five meetings during 1973 under its Chairman, Dr. K. J. M. Carruthers.

The Committee regretfully lost the membership of Professor, M. F. Lockett, Mr. G. H. Dallimore, Dr. L. W. Samuel and Mr. A. C. McWhinney due to retirement at the beginning of the year. They were foundation members who had devoted a considerable time to committee service in this and other ways.

Pesticides

The Pesticides Advisory Committee continued to meet. Metrication of pesticide usage was instituted.

Ninety three (93) submissions for use of agricultural chemicals were received under the National Clearance Scheme via the Technical Committee on Agricultural Chemicals ; thirty one (31) submissions concerned new chemicals or new formulations, and sixty two (62) submissions requested new uses for chemicals previously accepted for use in Australia.

One hundred and seventy nine (179) applications were received for registration of formulations of cleared chemicals for this State ; one hundred and sixty (160) were registered, the remainder being still under consideration.

After allowance for cancellations of previously registered products, one thousand three hundred and thirty eight (1 338) formulations of chemicals were registered in Western Australia at 31st December, 1973.

Appendix IX

Dental Health Service

J. L. Prichard, Dip.D.S., B.D.Sc., F.I.C.D. – Principal Dental Officer

Given hereunder are details of the activities of the Dental Health Service during the year ended 31st December 1973.

1. CLINIC SERVICES

The service continued to operate dental clinics at Wyndham, Derby, Broome, Port Hedland, Tom Price, Dampier, Wickham, Newman, Exmouth, Beverley, Margaret River, Ongerup, and Three Springs.

The Kojonup Clinic was taken over by a private dental practitioner during the year and new clinics were opened at Karratha, Goldsworthy and Paraburdoo.

Regular visiting services were provided at Kununurra, Balgo Hills Mission, Halls Creek, Kalumburu Mission, Derby Leprosarium, Lombadina, Beagle Bay and La Grange Missions, Fitzroy Crossing, Cockatoo and Koolan Islands, Kuri Bay, Shay Gap, Wittenoom, Onslow, Pannawonica, Morawa, Quairading, Brookton, Gnowangerup and Jerramungup.

Three itinerant road services were engaged in towns and missions in the east Pilbara, Murchison and Gascoyne regions, the North Eastern Goldfields, and Agricultural areas, including a regular itinerant service to institutions in and around the metropolitan area.

Table 1 shows the volume of treatment provided during the year.

At 31st December 1973, the Service employed 23 Dentists, 7 Nurses and 23 Dental Clinic Assistants.

2. AUSTRALIAN SCHOOL DENTAL SERVICE

During the parliamentary session which ended in December 1972, amendment to the Dental Act provided for the registration of dental therapists and for the employment of trained dental therapists in private practices and in government services.

Following the initiative of the Commonwealth Government, this State agreed to develop a School Dental Service along specific lines which will allow rapid expansion of existing programmes of dental care for school children. This new Service which will be provided by School Dental Therapists in clinics located within the precincts of selected schools will be quite distinct and separate from previous developments in dental therapy in this State.

Until now dental therapists have been trained at the Western Australian Institute of Technology for service in both private practices and the Dental Health Branch of the Public Health Department. To meet the demands of the private sector, the Institute of Technology is continuing with the training of dental therapists. The training of School Dental Therapists, however, will be carried out under the direction of the Public Health Department and this is a situation which applies in all States. Health Department trained School Dental Therapists will be used exclusively in the schools Dental Service. Training in the Public Health Department's programme is essentially practical in nature with an emphasis on dentistry for primary and secondary school children under the age of 15. This distinguishes the School Dental Therapist from those girls educated at the W.A.I.T. for employment in the field, including adult dentistry.

A. The Aim of the Scheme

The basic objective is to develop a comprehensive school dental service offering free dental care to all children under age 15.

(i) The service will be staffed by school dental therapists working under the direction and control of dentists.

(ii) The initial target of the programme will be to provide dental care to all children in infant classes and primary grades by 1980. The service will then be extended to cover all pre-school children and secondary school students under 15 years of age.

(iii) The service will eventually offer free dental care and treatment to each child at least once per year.

(iv) Treatment will be provided at school dental clinics, of either fixed or mobile design, situated in close physical association with schools.

(v) Dental health education will be developed as a vital part of the total scheme.

B. The Role of the Australian and State Governments

The Australian and State Governments have distinct roles in the provision of the scheme. The State Department is responsible for the actual implementation and administration of the service, while the Australian Government, in addition to providing the greater part of the finance for implementing and continuing the scheme, coordinates the scheme through an Advisory Council comprised of State and Commonwealth representatives. In this State, the Principal Dental Officer and the Secretary, Public Health Department, are representatives on this Council.

C. Financial Support

The Australian Government will provide the following financial support :—

(i) The total capital cost of providing training and accommodation facilities for dental therapists.

(ii) The total operating costs of training all dental therapists, including their remuneration while training, provided that such therapists will be employed solely by the School Dental Service.

(iii) The total capital cost of building and equipping new school dental clinics, of modifying existing clinics provided they meet with requirements, and providing mobile units where necessary.

(iv) Three-quarters of the operational costs of providing the service once the scheme commences and three-quarters of current operating costs of existing school dental services provided such services are in accordance with the general concepts of the overall scheme.

In the last session of the Parliament (1973), an amendment to the Health Act was introduced to permit the establishment of a school Dental Service within the Public Health Department and to provide for the implementation of a training programme for School Dental Therapists.

A Dental Therapy Training School is under construction on a site adjacent to existing hospital and institutions at Mt. Henry. 60 first year students will commence the course in January/February 1974. In the second year of the course, training will continue with 30 of the second year students remaining at the Mt. Henry school, whilst the other 30 second year students will complete the course at a " section " training clinic to be built in an area yet to be selected. Negotiations are under way to acquire land in the suburb of Warwick and to complete the new clinic by 1976.

On Graduation these therapists will be employed at fixed and mobile centres in schools. The following factors are taken into account in establishing centres :—

(a) The demography of eligible student populations.

(b) The dental needs as indicated by school dental inspections, and

(c) Socio-economic circumstances of parents in particular localities.

During 1973 Preventive Dentistry Centres were established at three metropolitan primary schools : Kewdale, Palmyra and Balga. These were staffed by graduates of the W.A.I.T.'s School of Dental Therapy.

Three Dental Therapists were employed at each centre, under the direction and control of a Dental Officer.

In Table II, the activities of each centre are shown.

3. SCREENING OF CHILDREN IN SCHOOLS AND KINDERGARTENS

800 schools and pre-school centres were visited. 59 469 children were examined of whom 25 916 were referred for dental treatment.

In addition, 3 782 children were examined on behalf of the Department by mobile units of the Perth Dental Hospital. Of these, 2 434 were found to require dental treatment. Information about the Government Subsidy Scheme for low income families was given to each child.

Of 21 043 attending schools where cakes and sweets are freely available, 43% required dental treatment. Of 9 883 to whom lollies etc, were unavailable at achool, 38% required treatment.

The proportion of schools with dentally acceptable menus is increasing in relation to the schools which sell cariogenic snacks.

Every opportunity was taken to assist teachers with dental health education and classrooms were visited on request.

4. DENTAL HEALTH EDUCATION

A. Teachers Colleges

Continuing our policy of giving information about current issues in dental health to student teachers, a total of 54 lectures/discussions were conducted with first year students at Claremont, Graylands, Churchlands and Mt. Lawley, and secondary teachers colleges.

In addition, plans have been finalised to lecture to all final year groups at all primary colleges about the Dental Therapy scheme. These additional lectures will begin in 1974.

In-service courses for teachers : The Dental Health Education Officer participated in 2 courses during this year.

B. Other opinion leading groups

Lecture/discussions were held for the following groups :—

	No. of sessions
General Nursing Training Schools	42
Child Health Course, Ngala	4
Mothercraft Course, Ngala	6
Canteen Supervisors Course	2
Nursing Aide Training Schools	10
Dental Technicians	2
Kindergarten Teachers College	2
Child Health Services Course	2

New groups for which courses where begun:

Pre-School Course, Ngala	2
Public Health Nursing Course	2

A project to stimulate interest in dental health in the Pingrup Shire was planned and implemented at the request of the Perth Dental Hospital.

C. Australian Schools Dental Service

Close liaison with the health education section of the Education Department has been maintained and a health education curriculum supplement is being produced for use in schools where Preventive Dentistry Centres are located.

Development of dental health education at these schools will be guided by officers of both departments.

The Dental Health Education Officer attended all meetings of the Preventive Dentistry Committee of the Australian Dental Association (W.A. Branch).

5. FLUORIDATION

A survey of children who had lived on the Goldfields Water Supply scheme since it was fluoridated in 1968 showed that the benefits of fluoridation are becoming apparent. In the 6 and 7 year old children, there are less decayed teeth, less extracted teeth, less teeth requiring extraction and more of the decayed deciduous teeth have been filled.

6. SUBSIDISED DENTAL CARE

Under this programme, assistance towards the cost of dental care is provided for school children and pensioners.

Weekly income and family size are the principal factors in assessment of eligibility.

Table III is a summary of the treatment provided and subsidy paid. 3 665 applications were received and, 2 670 people received assistance. The cost was $18·43 per child and $58·94 per pensioner, total expenditure being $100 256.

7. RETIREMENT

In July, 1973, after 36 years service with the Department, Mr. Eric Turnbull retired.

Mr. Turnbull joined the service in April, 1937 and at the time of his retirement held the position of Senior Dental Officer.

During this period the Dental Health Service establishment has grown from 3 Dental Officers to its present level of 21 Dental Officers, 9 Dental Therapists, 27 Nurses and 5 support staff.

Table I

Yearly Summary of Treatment in Departmental Clinics—1973

	NUMBER OF TEETH RESTORED											COMPLETED DENTURES						
		Amalgam																
	Teeth Extracted	Synthetic	Single Surface	Compound	Inlay	Crown Bridge	Completed R.C.T.	Dressing	X-ray	Prophylaxis	Minor Surgery	F.U.	F.L.	P.U.	P.L.	U/L R.A.	Rebase	Repair
Children	2 796	1 151	4 908	3 583	27	19	97	1 158	1 286	553	54	5	....	3	....	45	....	4
Adults	6 517	4 571	4 966	5 996	95	111	219	2 058	2 628	2 991	383	344	190	241	76	26	62	376
Total	9 309	5 722	9 874	9 579	122	130	316	3 216	3 914	3 544	437	349	190	244	76	71	62	380

Table II

SUMMARY OF ACTIVITIES AT PREVENTIVE DENTISTRY CENTRES AT KEWDALE, PALMYRA AND BALGA PRIMARY SCHOOLS FOR THE SCHOOL YEAR ENDED DECEMBER 1973

	Kewdale	Palmyra	Our Lady of Fatima	Balga	Totals	
Children enrolled at schools	701	440	197	827	2 165	
Children enrolled for dental care	571	372	85	661	1 679	
Percentage enrolled for dental care	81·4%	84·5%	43·1%	80%	77·6%	
Children completed, on recall	549	354	38	550	1 491	
Fillings — Amalgam	2 826	2 013		2 530	7 369	5·17/child
Fillings — Silicate	122	124		98	344	
Teeth Extracted	327	222		304	853	·57/child
Percent of children completed and placed on recall	79·6%	83·9%		77·5%	80%	

In addition, 206 pre-school children were enrolled, of whom 151 were completed and placed on recall.

Table III

SUBSIDISED DENTAL CARE

Annual Summary of Treatment Provided and Claims Paid Year Ending 31*st December* 1973

	Number of People	Total Fees	Subsidy	% of Total Fees	Number of Visits	Number of Fillings	Number of Teeth Extracted	Prosthetic and other Appliances
		$	$					
Children	1 398	34 828	25 778	74	3 760	3 549	1 296	31
Pensioners	1 249	84 239	73 624	87	3 491	953	1 509	1 282
Others	23	1 067	853	80	44	27	7	11
Totals	2 670	120 135	100 256	83	7 295	4 529	2 812	1 324

Appendix X

Nursing Administration Section

Miss M. E. Beard, D.N.A., F.C.N.A. – Principal Matron

1. NURSING SERVICE

Problems were encountered once again in attracting adequate numbers of Registered Nurses to the Nursing Service, particularly in some of the north-west hospitals, where in previous years, during the winter months, there were waiting lists for staff to go to such places as Derby, Wyndham, Kununurra, Port Hedland and Roebourne.

An unfortunate strike at the Port Hedland Hospital involved Nursing Aides, and placed a heavy burden on the Matron and the Registered Nurses. Much credit is due to them for keeping the hospital functional.

In June, a critical staff situation at the Derby Hospital, due to an unusual influx of child patients, was overcome with the help of extra staff generously loaned from metropolitan hospitals.

Otherwise services have not been interrupted, and a high standard of nursing care has been provided, thanks to the Matrons and Nursing Staff of the hospitals, as well as to the Emergency Nursing Staff, sine qua non.

Sister M. Damien (of St. John of God). The tragic death of Sister Damien, who practised in the best traditions of nursing and humanity, in the Kimberley for many years—was felt keenly by all who knew her.

1.1 Emergency Nursing Service 1/1—31/12/73

(i) appointments :	6 months contract	11
	12 months contract	30
	Total :	41
(ii) resignations before contracts completed		2
(iii) number employed at 31/12/73		35

1.2 Public Health Field Nurses

With the continued development of the Community Health Service, this group of Nurses, in both urban and rural areas, now numbers—

65 Registered Nurses
4 Nursing Aides
10 Nursing Assistants

1.3 Public Health Diploma Course (6 months)

This was inaugurated at the Western Australian Branch of the College of Nursing, Australia, in 1973, with 15 students 10 of whom received scholarships. The Course will be extended to 48 weeks in 1974/75.

2. NURSING CENSUS

The Biennial Nursing Census was taken on 30th June 1973, to ascertain the numbers of registered nurses, nursing aides, mothercraft nurses and nursing assistants, practising in Western Australia, both in full time (40 hrs per week) and part-time capacities.

Increases on figures for the 1971 Census were noted in all categories, but there was no improvement in the overall staff situation. One reason for this could be the many new beds provided in departmental and country board hospitals, as well as private hospitals and nursing homes, requiring additional staff.

3. NURSE EDUCATION

3.1 Post-graduate Studies—scholarships

(i) *College of Nursing, Australia—Melbourne*

Miss R. Conway—Nursing Administration Diploma Course.
Mr. R. R. Dorn—Nurse Education Diploma Course.

(ii) *College of Nursing, Australia, West Australian Branch*

Miss J. O. Wishart—Public Health Diploma Course
Miss J. L. Swift
Miss L. R. Keddie
Miss E. E. Wallent
Miss M. A. McDonald
Miss M. Cappaert
Miss C. Harper
Miss J. P. Frantom
Miss K. D. Shadbolt
Miss M. Ross

(iii) *Helen Bailey Scholarship*
Miss M. Wilkinson, Occupational Health Sister, Department of Public Health, was awarded this scholarship for 1973. She completed observation tours in New South Wales, as well as in the United Kingdom.

3.2 Government School of Nursing

General Training :

During the period 1st January, 1973 to the 31st December 1973, recruitment into General Training was as follows :—

Kalgoorlie Regional Hospital	9
Geraldton Regional Hospital	10
Northam Regional Hospital	15
Bunbury Regional Hospital	14
Transfers from other Training Schools	7
Resignations from the Pre-Clinical Period	5
Transfers from Pre-Clinical Period to Nursing Aide Course	2

Number of Students completed General Training :—

Kalgoorlie Regional Hospital	15
Geraldton Regional Hospital	6
Northam Regional Hospital	9
Bunbury Regional Hospital	1
Total	31

Terminations from General Training	4

Resignations from General Training :—

Kalgoorlie Regional Hospital	1
Geraldton Regional Hospital	1
Northam Regional Hospital	3
Bunbury Regional Hospital	1

The secondment of students to Royal Perth Hospital continues and is satisfactory.

A total of 142 students from Royal Perth Hospital obtained Maternity and Child Health Experience at the Regional Hospitals in 1973.

On the 26th March, 1973, the first group of student nurses was seconded to the Mental Health Services for orientation to aspects of mental health. The students spend a month in this area being introduced to all facets of the work, nursing patients with acute and chronic psychiatric conditions.

Staff

Miss E. E. Harler, A.R.R.C., E.D., F.C.N.A.
Organiser of Nurse Training

Miss M. P. Underwood, F.C.N.A. — Principal Nurse Educator
Nursing Education Diploma

Miss W. Gardiner, — Senior Nurse Educator
Nursing Education Diploma

Miss P. Smart — Clinical Instructor

Miss M. R. Baird
Nursing Education Diploma — Nurse Educator

(Miss Baird successfully completed the Nursing Education Diploma Course at the College of Nursing, Australia—W.A. Division, in January, 1973.

Mrs M. Owen — Nurse Educator
Nursing Education Diploma

(Mrs. Owen transferred to Swan District Hospital on the 28th May 1973, to take up the duties of Nurse Educator to Nursing Aide students).
Mrs. Owen resigned on the 25th November, 1973.

Mrs. L. H. Lewis — Nurse Educator
Diploma Nursing Education

(Mrs. Lewis commenced duty as Nurse Educator at the Government School of Nursing on the 15th January 1973. She successfully completed the Nursing Education Diploma Course at the College of Nursing, Australia—W.A. Division, in June 1973.

Mrs. E. J. Turner — Home Sister

(Mrs. Turner retired on the 6th April, 1973, after completing seven years of service with the Government School of Nursing).

Mrs. M. Bothwell was appointed Home Sister on the 26th March, 1973.

Geraldton Regional Hospital

Mrs. W. Walton (deceased 25th May 1973.) Mrs. Walton had given loyal, conscientious service to the Government School of Nursing in her position as Clinical Instructor to General Training students at Geraldton Regional Hospital.

The staff of Government School of Nursing visited country training schools on 32 occasions, providing advice and assistance in the field of Nurse Education.

Conferences

A Refresher Course was held at the Government School of Nursing from the 27th August 1973 to the 21st September 1973. A total of 17 Nurse Educators and Clinical Instructors engaged in the instruction of Nursing Aide students, attended.

On the 13th September 1973, Matrons of all General Training and Nursing Aide Training Schools attended a meeting held at the Government School of Nursing. Following this, a meeting was held at Royal Perth Hospital to discuss the student programme existing between Royal Perth Hospital and Government School of Nursing.

On the 5th September 1973, the first meeting was held in connection with the suggested Post-Basic Geriatric Course for Registered Nursing Aides.

A meeting of all matrons of peripheral hospitals was held on the 6th December 1973, to discuss the clinical experience for General Training students.

Post Basic Advanced Course in Coronary Care

In collaboration with the Government School of Nursing, the Heart Foundation of Australia (W.A. Division) conducted a Post Basic Advanced Course in Coronary Care, at the Government School of Nursing from the 26th March 1973 to the 20th April 1973. The course was attended by eighteen (18) Sisters from country and metropolitan hospitals.

Nursing Aides

Number of Nursing Aides commenced training		203
Number of Nursing Aides passed Nurses' Board Final Examinations		194
Terminations	33	
Resignations	40	
	73	

Interviews

During 1973, 863 persons were interviewed by appointment. In addition there were also a number of casual interviews of schoolgirls and parents who called at the Government School of Nursing for information.

4. RECRUITMENT

4.1 Bursaries to 4th and 5th year secondary school students :

1 year 1973—22

2 years 1972/3—110

2 years 1973/4—100

Pre Nursing bursaries, Mt. Lawley Technical College—22

4.2 Nursing Publicity and Recruitment

Active promotion of nursing as a career was continued by personal contact and through the various media.

(i) visits to schools in urban and rural districts; and hospital tours arranged;

(ii) attendance at Careers Nights, exhibitions, and a " Vacation School for future nurses ".

(iii) distribution of information through brochures, film, newspapers, tape, individual letters, and appropriate journals.

4.3 Nursing Employment Section

Staff have been recruited for various hospitals throughout the state; and advice and information given to many inquirers per telephone, letter and personally.

5. INSPECTIONS

Departmental Hospitals	50
Board Hospitals	50
Private General Hospitals	18
Private General and Maternity Hospitals	12
Private Maternity Hospitals	3
Private Nursing Homes	276
TOTAL :	409

6. PRIVATE HOSPITALS

6.1 **Numbers at 31/12/73 :**

General	10
General and Maternity	7
Maternity	2
Nursing Homes	111
TOTAL :	130

6.2 **New hospitals opened 1973 :**

Attadale G. M.	57 beds	
Kalamunda Spa, G. M.	48 beds	
Oats St. Carlisle, G.	38 beds	143 beds
Applecross N/Home	54 beds	
Concorde N/Home	59 beds	
Joondanna N/Home	20 beds	
Silver Chain—Hilton Park	61 beds	
Kimberley N/Home	93 beds	
Victoria Park East	85 beds	372 beds

Extensions :

Leighton	9 beds	
Agmaroy	2 beds	
Corlei	1 bed	
Carinya Village	2 beds	
Braille	22 beds	
Koh-i-noor	3 beds	
Wearne House	6 beds	
Midland	6 beds	51 beds
Total — New Private Hospital beds :		566 beds

6.3 Private hospitals closed 1973 :

Westminster (G)	24 beds	
St. John of God Northam Nursing Home....	12 beds	
Headingly	16 beds	
Ferndale	22 beds	
Fairhill	28 beds	
	—	102

6.4 Net increase in numbers of private hospital beds — 464

6.5 Private Hospitals under construction :

Kaleeya, East Fremantle (G)	41 beds
John Wesley Lodge, Rowethorpe	61 beds

6.6 Plans viewed for proposed development of new private hospitals; and extensions :

Midland Convalescent Hospital extension	43 beds
General Hospital, Malcolm St., Perth	40 beds
Yokine Maternity Hospital	48 beds
Bunbury Nursing Home	56 beds
Nedlands Council—Nursing Home....	30 beds

I would like to express my appreciation to the staff of the Government School of Nursing, and the Nursing Administration Section, for their willing assistance and co-operation at all times.

Appendix XI

Division of Occupational Health

Dr. J. C. McNulty, M.B., B.Ch. B.A.O. (Belfast), D.I.H. R.C.S. & P. (England), D.I.H.S.A. (London), D.P.H. (Sydney), F.A.C.M.A., Director

PNEUMOCONIOSIS AND THE MINING INDUSTRY

Mining Examinations

7 609 men who entered the mining industry during 1973 were examined under the Mines Regulation Act and 5 330 miners under the Mine Workers' Relief Act. There were 250 miners suffering from silicosis and of these 21 were new cases.

The total number of men diagnosed as suffering from silicosis continued to fall which is probably a reflection of the declining number of men employed in the gold-mining industry. The number of new dases diagnosed each year fluctuates but the incidence probably remains the same.

Table 1

Number of miners diagnosed as suffering from silicosis.

	1969	1970	1971	1972	1973
New cases	36	30	15	19	21
Total	427	429	353	309	250

There was one new diagnosis of asbestosis/silicosis in a miner from the Wittenoom mine and one new case of mesothelioma. There were two new cases of pulmonary tuberculosis.

Pneumoconiosis Medical Board

The number of applicants for Workers' Compensation for pneumoconiosis who were examined were as follows :—

Table 2

	1969	1970	1971	1972	1973
Number examined	345	211	160	185	210
New claims	150	150	48	73	112

Over 50% of the new claims were found not to be disabled by pneumoconiosis. Almost all these men presented for examination without supporting medical evidence that they were disabled by pneumoconiosis.

Other Dusty Trades

Medical examinations and chest X-ray surveys of other workers employed in dusty trades has been continued. 619 men had chest X-ray examinations.

Lead Workers

Tests and supervision of men engaged in work involving exposure to lead were carried out in co-operation with the Department of Labour and Mines.

Altogether 173 urine tests were arranged through the Government Chemical Laboratories.

Where conditions were encountered which caused anxiety regarding lead exposure of workers, personal samplers were used to measure lead exposure. 21 lead workers were suspended temporarily because of increased lead absorption. All known work places where lead exposure occurs are surveyed regularly and periodical clinical tests on men are carried out. Battery breaking plants remain the source of greatest concern. There were no frank cases of lead poisoning and no one required treatment.

The demolition of the lead acid tanks in a large superphosphate works presented a new type of problem. Safe working conditions were difficult, almost impossible, to maintain, but satisfactory control was achieved using weekly or fortnightly blood lead estimations. Only two lead workers had to be taken off lead because of persistently high figures.

Isocyanates

The manufacture of polyurethane products continues to be a problem. Air tests for isocyanates have been done in a number of industries and advice on ventilation given. Periodic respiratory function tests have been done on workers regularly exposed.

Spraying non volatile isocyanates still causes chest symptoms if inadequate respiratory protection is worn.

Pesticides

During the year 77 firms were either registered or re-registered for commercial pest control work and 192 men as operators. A considerable turn-over of employees took place and some transferred from one company to another. New men coming into the industry are now expected to have better training than previously, and small firms without training officers are at a disadvantage. It has always been obvious that most pest control operators would benefit from a course of training and a course has now been provided by the Education Department Technical Division and has been well received.

Follow-up field supervision of operators and checking of vehicles has taken place from time to time. Although a definite improvement in the standard of equipment has taken place, the labelling of containers used on the vehicles still leaves room for improvement. Stickers have been used and these tend to be rubbed, off while paint is not very satisfactory on most plastic surfaces.

Four commercial firms were re-registered to do fumigation work and 24 operators re-licensed. 29 ships were fumigated at W.A. ports. Of these 15 were treated with cyanide and 14 with methyl bromide.

21 non commercial fumigators were licensed to carry out their own work. Almost all of these operators were involved in the protection of food.

Aerial spraying at Kununurra still requires close supervision. The District Medical Officer at Kununurra arranged regular periodic blood tests of sprayers 241 cholinesterase level tests were done and 11 tests for organochlorine levels. As a result of the tests 4 men had to be removed from further pesticide exposure.

Hearing Conservation in Industry

Since the Noise Abatement Act was passed in late 1972 there has been much more interest and concern about excessive noise levels in industry. Emphasis is always placed on reducing noise at source and a number of industries have spent a great deal of ingenuity and money to lower noise levels.

Hearing Conservation Programmes were carried out in a wide variety of industries. Over 1 000 audiograms were done on workers suspected of suffering hearing loss.

The Division also received many complaints about community noise. The most frequent causes of complaint were shopping centres, air conditioning and refrigeration units, amplified music, demolition and construction sites and night clubs. At the request of the police noise levels inside night clubs and hotels during " music " performances were taken. Levels as high as 120 dB(A) were measured.

Dermatitis

Routine enquiries and investigations were carried out on a number of substances. Solvents and abrasives continue to be the commonest cause of industrial dermatitis.

One non-industrial cause of interest was pinewood chips. After a neighbour had covered the major part of his garden with wood chips the man next door developed severe allergic skin manifestations and an asthmatic reaction. His symptoms persisted for some time until after persuasion the neighbour cleared all the chips away from his property.

Kinetics

Hospitals

Lecture/Demonstration services were routinely given to nursing and other staff at the following hospitals

The Government School of Nursing
Albany Regional
Bunbury Regional
Kalgoorlie Regional
Mt. Henry
Warren District
Princess Margaret
Royal Perth

Non-routine assistance or advice was given at—

Carnarvon
Cunderdin
Kellerberrin
Margaret River
The Village Hospital
Quairading
Pre Nursing students at Penrhos College

Accidents to Hospital Staff

Abstraction and analysis of accidents to Hospital Staff continued. Collation of accident statistics for the three branches of the Health Services commenced.

Industry

Lectures on Ergonomics were given to—

Health Inspectors
Factory Inspectors
Catering courses
Guildford Grammar School.

Liaison with the Metropolitan Water Board resulted in preparation for a series of training sessions for all levels of management to be held in 1974.

Equipment

In association with the Quadriplegic Association an electric chair was being designed and by May problems of control, motor, transmission and wheels had been resolved. It is understood that a second prototype will be completed shortly.

A survey on the effects of sleeping on water beds was prepared for commencement in 1974.

Staff

Dr. D. D. Letham, who was the first full time appointment in Occupational Health in W. A., retired during the year. He created the Division and the result of his vision, forcefulness and wisdom can be clearly seen in W.A. today. Perhaps his most notable achievements were in the Clean Air and Noise Abatement areas.

During the year Dr. J. C. McNulty was appointed Director and Dr. F. Heyworth, Physician.

Sister L. Woodland was appointed assistant Occupational Health Officer.

The Director was honoured by being asked to represent Australia at a meeting of experts held by the International Labour Organisation in Geneva on the safe use of asbestos. He also chaired the meeting.

Education and Other Activities

In addition to previously stated activities the Division chaired or was represented on the following :

N.H. & M.R.C. Occupational Health Committee.
Air Pollution Control Council and Scientific Advisory Committee.
Radiological Advisory Council and Medical Advisory Committee.
Pneumoconiosis Medical Board.
Noise Abatement Advisory Committee.
Poisons Advisory Committee.
Electrical Safety in Hospitals Committee.
Mines Ventilation Board.
Australian Council on Smoking and Health.
State Government Industrial Safety Committee.
Ord Ecology Sub-Committee.
Coogee Air Pollution Study Group.

Lectures, demonstrations, seminars, etc. were given to many groups including medical students, Health, Factory and Scaffolding Inspectors, Sandblasting organisations, etc.

CLEAN AIR SECTION

The activities of the Section are included under the following headings :—

A.—MONITORING OF AIR POLLUTANTS.

B.—SPECIFIC INVESTIGATIONS AND TESTING.

C.—ADVISING ON AIR POLLUTION CONTROL COMPLAINTS

D.—EDUCATION.

E.—STATUTORY DUTIES.

A.—MONITORING OF AIR POLLUTANTS

1. Dust Monitoring

Complaints about dust are still more prevalent than complaints of other types of air pollution and they have been received at a frequency similar to preceding years.

The monitoring activities in this field have been extended from the previous year mainly through the continued assistance of health surveyors in country Shires.

The Central Electricity Research Laboratory directional dust gauge is mainly used for dust monitoring. It has the advantage that the source of the dust can be located directionally, that is to say in a northerly, southerly, easterly or westerly direction. Furthermore, samples of the collected dust can be analysed for specific components which again can be related to the direction of the source. Dust concentrations are expressed in units which represent the obscuration of light by the dust, which are related to the directions of the complaint provoking factor.

The measurement of deposited dust in the metropolitan area has been commenced, to assist with comparisons of fall-out in other capital cities. The standard N.S.W. glass funnel and jar is used, with the results expressed in milligrams per square metre per day.

Perth Area

Late in 1973 the number of dust gauges sited in the metropolitan area was increased from 19 to 23. The four extra dust gauges were installed in the Rivervale area near a cement works which has been the cause of persistent dust complaints.

The dust gauges installed by an alumina refinery and a steel works in the Kwinana–Naval Base area are still operated by the companies and processed by this section.

The locations of the Public Health Department CERL gauges as at December 1973 were :—

December 1973

City Beach	Naval Base
East Perth	Maddington (2)
Lathlain Park	Gosnells
Welshpool (3)	Rivervale (5)
Kewdale (3)	Jandakot (4)
Perth Airport	

For results see Appendix A.

A deposit gauge was installed at City Beach in September 1972, and three new gauges installed in the beginning of 1973 at East Perth, Lathlain Park and Welshpool. The average fall-out for the year is shown in Appendix B.

Port Hedland

Complaints of dust from the two iron ore stockpile sites in Port Hedland have decreased during 1973. Officers from this section visited Port Hedland on several occasions.

There was a decrease in total dirtiness towards the end of the year. This is partly due to the increased and greatly improved suppression activities by the companies but there are other contributing factors.

The Building Surveyor, Shire of Port Hedland has continued to collect the dust samples from the eleven gauges and forward them to the section's laboratory in Perth for processing.

At December 1973 the locations of the dust gauges had not been changed from the previous year. The dust samples from each site have been analysed for iron and manganese expressed as Fe_2O_3 and MnO_2 every second month.

For results see Appendix C.

Cape Lambert/Dampier

The four dust gauges at Cape Lambert were maintained during 1973 and a further two gauges installed in the Dampier town site.

The Health Surveyor, Shire of Roebourne has collected the samples and maintained the gauges in this area. The samples have been forwarded to the section's Perth laboratory for processing.

Gauge No.	Location
1.	Port area, Point Samson
2.	Immediately south of the port area, Cape Lambert
3.	North of Wickham Townsite
4.	South of Wickham Townsite
5.	Parker Point, Dampier
6.	Bowling Club, Dampier

For results see Appendix D.

Esperance

The dust survey in the Esperance Port Authority area was continued in 1973.

The samples are collected by the Esperance Port Authority and forwarded to this section's laboratory in Perth for processing. The dust samples are analysed for nickel content and the results are expressed as percent pentlandite.

For results see Appendix E.

Kalgoorlie

At the request of the Kalgoorlie Town Council and the Boulder Shire Council a dust survey of the towns of Kalgoorlie and Boulder was begun in April 1973. Twelve gauges have been installed. The samples are collected and the gauges maintained by the Health Surveyors for both local authorities and the samples forwarded to the sections' Perth laboratories for processing.

Location of Dust Gauges at Kalgoorlie

1. Great Boulder Mine
2. South Kalgoorlie School
3. East Kalgoorlie School
4. Eastern Goldfields High School
5. Boulder Central School
6. South Boulder School
7. Boulder Caravan Park
8. West Kalgoorlie Freight Yards
9. Kalgoorlie School
10. North Kalgoorlie School
11. Killarney Street Lamington
12. Elizabeth Street Kalgoorlie

For results see Appendix F.

Chemical analyses of the dust samples have been carried out by the Government Chemical laboratories.

2. Sulphur Dioxide and Particulate Monitoring Perth Area

The plan for locating sulphur dioxide and particulate monitoring sites radially from the Kwinana area (Fig. 1) has been expanded in the South Coogee area following involvement in the Coogee Air Pollution Study. During the year the Tuart Hill station was withdrawn and the Crawley station will be operating again early in the new year when a new site has been obtained.

The section wishes to thank the residents of many areas who have volunteered to assist the section in having and operating these sampling stations in their own homes.

During the year, the six battery powered sampling sites installed in the South Coogee area, as part of the Coogee Air Pollution Study have been maintained, and increased in number to seven.

For results see Appendices G and H.

The decrease in the annual average sulphur dioxide reading for Perth could be caused by the increase in use of natural gas in the metropolitan area.

Kalgoorlie

Monitoring for sulphur dioxide has continued from a site near the centre of the town during 1973.

For results see Appendix I.

3. Oxides of Nitrogen Monitoring

Three sampling sites, operating on a 24 hour time basc located at Claremont, Crawley and Perth have been operated throughout the year. These sites are indicated on Fig. 1.

For results see Appendix J.

4. Hydrogen Sulphide Monitoring

Hydrogen sulphide was mcasured at a single site on the boundary of a nickel, smelter at Kwinana. Although the odour of the sulphide is occasionally noticeable the measured concentrations are generally very low, as shown in Appendix K.

Motor Vehicles

City surveys and monitoring for pollutants continued under the following categories:

1. Pedestrian exposure tests, measured on the footpath at locations throughout the city (see Fig. 2) and Appendix L.

   At site 7 continuous monitoring of carbon monoxide was conducted over a 14 day period. The results, with corresponding urban wind data, obtained from Perth Airport are shown in Figure 3.

2. 24 hour exposure tests, measured in the city at 57 Murray Street, Perth. See Appendices M and N.

3. Car Park tests, measured in underground car parks. See Appendix O.

Lead was determined at 57 Murray Street, Perth on a regular basis. The yearly average of lead in the air was 1.4 micrograms per cubic metre, but this figure is not reprcsentative due to technical difficulties associated with the determination of very small quantities of lead. New sampling equipment will be obtained to overcome these difficulties.

5. Monitoring Trends Summary

1. *Dust Fall*

A comparison is shown of dust falls for the Perth Metropolitan area and several sites in New South Wales.

All results are shown in milligrams per square metre per day

Year	City Beaeh Perth	East Perth Perth	Welshpool Perth	Lideombe Sydney	Paddington Sydney	Neweastle City Hall	Port Kembla
1971				40	77	147	590
1972				50	63	156	830
1973	13	55	38				

2. *Sulphur Dioxide*

Local measurements are most reassuring when compared with the World Health Organisation Air Quality Criteria and Guides for Urban Air Pollutants, published in 1972.

The table below compares the annual averages for sulphur dioxide with the WHO Criteria annual average and several other cities.

All results in micrograms per cubic metre

Year	W.H.O. Criteria	Perth City	Medina	George Street, Sydney	Paddington Town Hall, Sydney	Los Angeles City	New York City	London
1971		24	8	50	133			267
1972	60	19	8	42	127	24	48	256
1973	60	15	5					248

The decrease in the annual average sulphur dioxide readings during the last three years in Perth is probably due to the increased use of natural gas in the metropolitan area.

3. *Carbon Monoxide*

Although the following table compares annual averages of carbon monoxide concentrations in cities, it is not a reliable comparison, as monitoring points vary in distance to the actual traffic source. The table shows a small increase in 1973 but this is to be expected with the increase in motor vehicle population.

All results are shown in parts per million

Year	Perth	Sydney	Los Angeles	New York	Philadelphia	Paris
1971	3·2	9·9	5·4	2·8	3·6	5·5
1972	3·2	11·1	5·2	2·8	3·7	7·7
1973	3·7					

4. *Lead*

Measurements of lead in city air, when compared with U.S.A. data, indicate similar levels as to be expected in high traffic density areas. Annual averages are shown for Perth city in micrograms per cubic metre.

1971	1972	1973
0·9	0·8	1·4

Similar measurements taken in American cities range from 0·7 micrograms per cubic metre in Washington to 4·6 in Los Angeles.

B.—SPECIFIC INVESTIGATIONS AND TESTING

1. Flourine

The emissions of fluorides from six superphosphate manufacturing works were measured.

Complaints of damage to vegetation have diminished and it would appear that the improved control methods are adequate for fluoride emission control.

For results see Appendix P.

2. Miscellaneous

Many brief investigations for Government Departments, Local Authorities and private companies were carried out during the year. Such investigations included the testing of compressed air cylinders used for SCUBA diving for carbon monoxide and hydrocarbons.

3. Coogee Air Pollution Study

Atmospheric monitoring of sulphur dioxide and dust was conducted by the Clean Air Section. For the initial stages of the study, manual operation of the six sulphur dioxide samplers were necessary, involving daily changes of equipment in the Coogee area. Automatic equipment arrived after several months, and the intensive labour demand on the survey was reduced. Continuous monitoring of sulphur dioxide was conducted at Naval Base and Wattleup.

Dust gauges, of the CERL type were maintained at 5 sites in and adjacent to, the area. The entire Clean Air staff participated in the controlled tracer experiments conducted on several occasions.

C.—ADVISING ON AIR POLLUTION CONTROL COMPLAINTS

The number of written and telephoned complaints was similar to that received in the previous year. Notwithstanding the continued efforts of industries to control their emissions, some can still be a genuine source of complaint for nearby residents. Many of these complaints arise from the unfortunate siting of certain industries relative to nearby residential areas.

Advice

Many enquiries were received by the section from members of the public and students for information and material for projects.

D.—EDUCATION

Lectures were given during the year at Mt. Lawley Technical School, the Western Australian Institute of Technology, and various professional organisations.

E.—STATUTORY DUTIES

All meetings of the Scientific Advisory Committee, of which the Director of Occupational Health and Clean Air is Chairman, were attended. Numerous reports have been prepared for the Committee by the Senior Engineer and his staff.

Inspections of premises by these officers have been carried out as required by the Scientific Advisory Committee.

The Senior Engineer is the State representative on the Air Pollution Sub-Committee of the National Health and Medical Research Council, and represents the Department of Environmental Protection on the Monitoring Sub-Committee of the Australian Environmental Council.

STAFF

Dr. H. H. Macey, who was the first full time appointee to the Clean Air Section, retired from the position of Senior Engineering in July. We owe a great debt to him for his early pioneering work in air pollution control in this State.

Mr. Powell was honoured by the World Health Organisation to receive a six month travelling Fellowship, during which time he visited the United States, Europe and Japan studying air management. On his return from overseas Mr. Powell was appointed to the position of Senior Engineer.

During the year the section was engaged in the Coogee Air Pollution Study which placed a considerable strain on the resources of the section. It became necessary during the year for some of the analytical work, which is normally done by the section to be done by the Public Health laboratories. It is anticipated that this work will be carried out by the section once again as soon as the Coogee Air Pollution Study has been completed. Even with the farming out of this work it has still been necessary for the staff to work a considerable amount of overtime. It is envisaged that the overtime worked will be reduced when additional staff are appointed in the new year.

FIGURE 1

SULPHUR DIOXIDE AND SMOKE MONITORING SITES

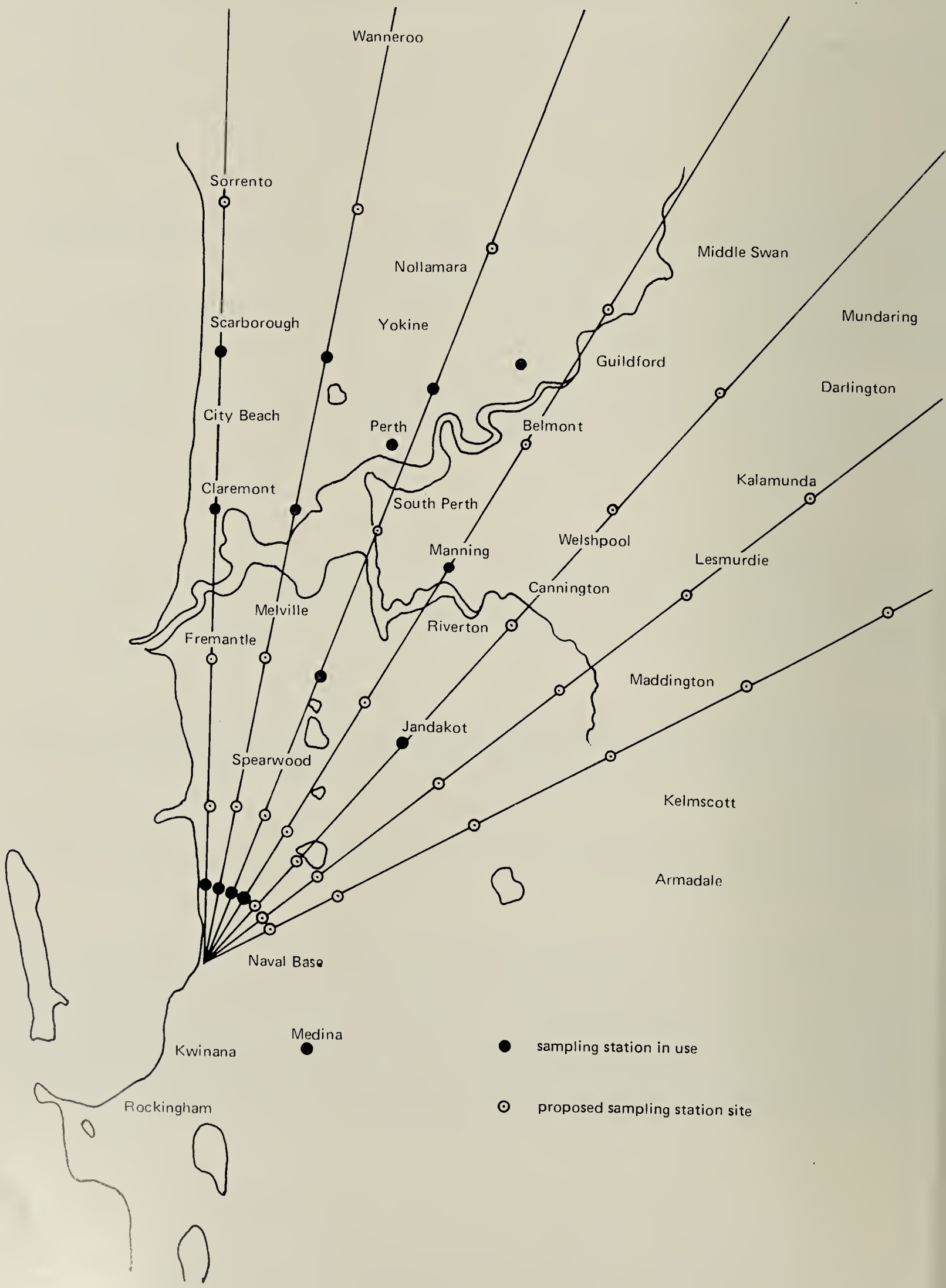


FIGURE 2

PEDESTRIAN EXPOSURE TESTING SITES

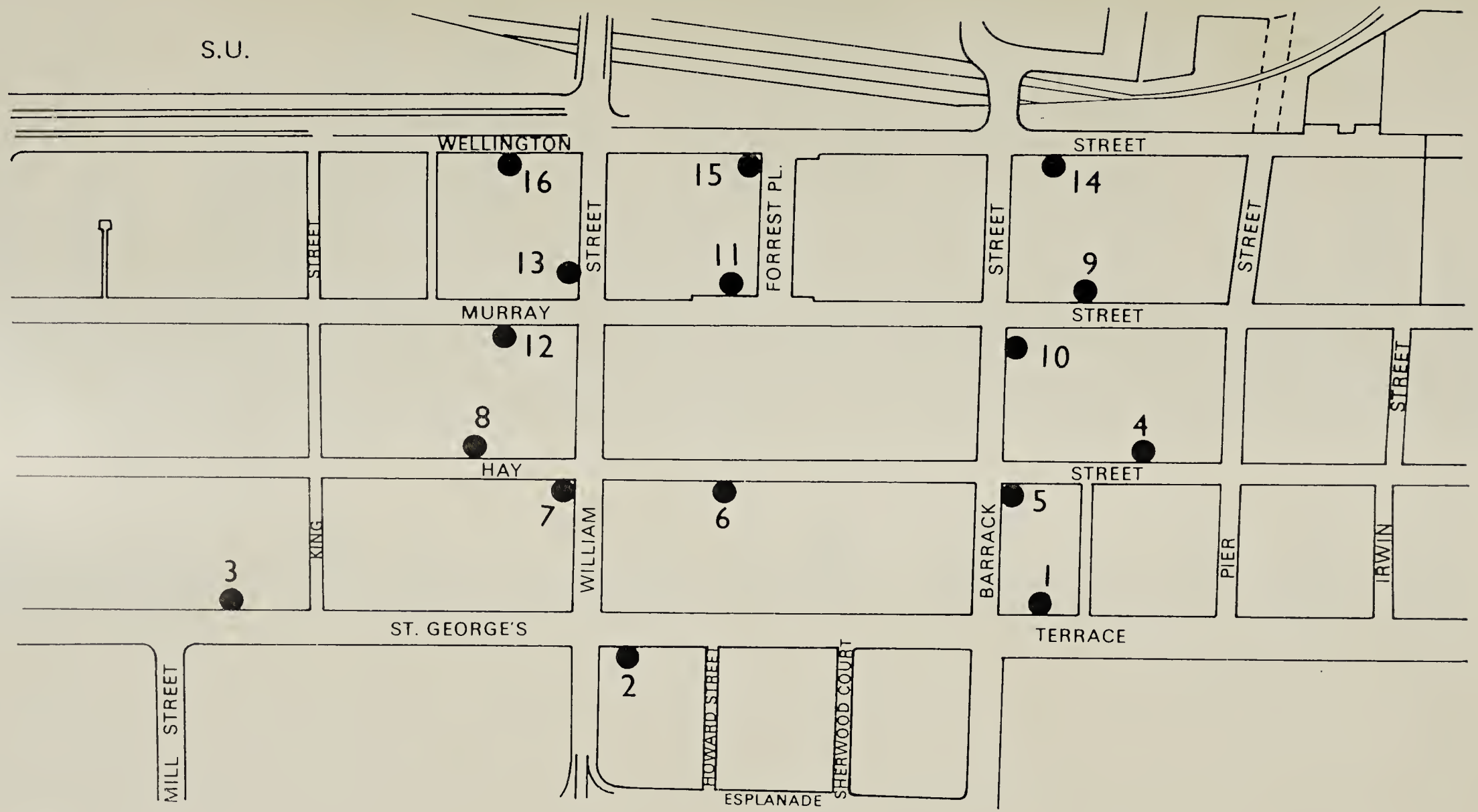


FIGURE 3

Carbon monoxide concentration in kerb-side air at city monitoring site No. 7 for period 1st December to 14th December 1973, hourly readings of CO. wind speed and direction

parts per million

13 12 11 10 9 8 7 6 5 4 3 2 1

Sat. Sun. Mon. Tue. Wed. Thu. Fri. Sat. Sun. Mon. Tue. Wed. Thu. Fri.

1st December

wind speed m/sec.

14th Dec

10 9 8 7 6 5 4 3 2 1

wind direction

N.W. W S.W S S E E N E N

Sat. Sun. Mon. Tue. Wed. Thu. Fri. Sat. Sun. Mon. Tue. Wed. Thu. Fri.

Appendix A

Dust Testing Programme–Perth Metropolitan Area 1973

Mean total dirtiness for the twelve months period January–December, 1973.

Gauge	Total Dirtiness
City Beach	1·0
East Perth	1·4
Lathlain Park	1·4
Welshpool 1	2·6
Welshpool 2	2·7
Welshpool 3	2·2
Kewdale 1	2·9
Kewdale 2	2·2
Kewdale 3	3·2
Perth Airport	1·7
Naval Base....	3·3
Maddington 1	8·3
Maddington 2	3·0
Gosnells	4·0
Rivervale	2·5
*Rivervale 1	4·8
*Rivervale 2	6·2
*Rivervale 3	4·7
*Rivervale 4	2·9
Jandakot 1	1·9
Jandakot 2	7·0
Jandakot 3	1·2
Jandakot 4	1·8

*One month only

Appendix B

Deposition (milligrams per square metre per day)

	1973	
	Total Insolubles	Total Inorganic
City Beach	13	7
East Perth	55	25
Lathlain Park	39	16
Welshpool	38	31

Appendix C

DUST TESTING PROGRAMME—PORT HEDLAND 1973

Gauge	Jan.		Feb.		March		April		May		June	
	T.D.	%	T.D.	%	T.D.	%	T.D.	%	T.D.	%	T.D.	%
1	38	....	15·4	52	17·3	....	17·2	68	52·2	....	31·4	58
2	280	....	9·2	30	11·3	....	13·7	64	21·8	....	11·7	57
3	41	....	6·0	9	10·1	....	3·4	24	5·6	....	5·6	15
4	21	....	5·7	12	7·8	....	2·0	14	6·0	....	3·8	17
5	25	....	7·4	16	8·7	....	3·4	22	4·1	....	4·9	22
6	100	....	18·6	49	65·6	....	24·3	71	79·1	....	37·4	73
7	60	....	7·5	22	6·3	....	8·6	49	11·0	....	9·7	55
8	28	....	12·7	15	17·0	....	14·9	62	21·2	....	39·6	71
9	31	....	9·6	4	9·6	....	9·0	7	7·6	....	6·1	9
10	102	....	29·0	61	34·1	....	32·7	72	86·7	....	27·9	71
11	24	....	4·5	9	2·8	....	5·8	16	1·8	....	1·3	16

1973—*continued*

Gauge	July		Aug.		Sept.		Oct.		Nov.		Dec.	
	T.D.	%	T.D.	%	T.D.	%	T.D.	%	T.D.	%	T.D.	%
1	12·5	....	33·3	61	17·4	....	19·8	56	16·4	....	26·2	55
2	7·1	....	22·8	67	14·0	....	13·8	59	7·4	....	20·2	54
3	2·2	....	4·7	32	4·9	....	4·0	18	4·0	....	9·1	33
4	1·8	....	3·4	28	2·6	....	1·4	14	5·4	....	8·0	32
5	2·4	....	4·0	9	2·9	....	1·3	18	4·5	....	10·8	21
6	12·2	....	23·4	72	15·0	....	6·7	68	11·8	....	22·1	70
7	4·1	....	8·3	45	11·9	....	3·1	46	3·7	....	7·8	48
8	4·7	....	13·8	59	5·7	....	5·4	59	6·5	....	5·8	41
9	2·5	....	4·7	13	3·9	....	3·6	6	5·1	....	6·1	10
10	21·0	....	48·7	77	29·4	....	20·2	66	20·0	....	54·4	72
11	1·5	....	4·2	15	8·6	....	1·2	15	5·3	....	4·9	42

% = per cent. iron ore in total dust from gauge.
T.D. = total dirtiness.

Appendix D

DUST TESTING PROGRAMME—CAPE LAMBERT/DAMPIER 1973

Gauge	Monthly Total Dirtiness										
	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov./ Dec.
1	12·8	7·8	35·1	10·9	5·6	14·1	12·2	4·9	7·7	5·5	3·4
2	11·9	4·5	18·5	9·6	8·9	16·9	27·0	9·6	13·8	7·8	4·4
3	....	2·4	....	5·3	6·5	7·1	16·4	11·5	4·2	1·5	2·1
4	....	2·9	7·2	2·9	3·0	5·5	18·5	2·0	2·8	1·8	
5		11·3	11·6	13·9	9·0	17·8	16·2	6·8	9·3	15·9	17·7
6		4·9	5·1	6·3	2·7	6·7	10·9	6·3	7·0	5·1	6·1

1–4 Cape Lambert
5, 6 Dampier

Appendix E

ESPERANCE PORT AUTHORITY DUST SURVEY 1973

Gauge	Dec.-Feb.		March		April		May		June	
	T.D.	%NiS	T.D.	%NiS	T.D.	%NiS	T.D.	%NiS	T.D.	%NiS
1 W		5·14		2·27		0·59		1·05		0·32
S	1·8	4·59	6·4	2·46	7·0	0·14	3·9	2·00	1·6	2·23
E		4·69		1·05		8·14		0·23		0·46
N		5·50		3·00		6·69		0·41		....
2 W		1·46		1·09		*		0·46		0·50
S		1·96		0·55		2·14		0·91		1·14
E	0·9	3·69	2·5	1·73	1·5	0·86	5·2	1·09	1·8	0·86
N		3·05		0·41		0·68		0·14		0·14
3 W		1·18		0·68		0·36		0·23		0·77
S	0·7	1·50	1·5	0·68	2·1	0·41	2·5	*	1·2	0·18
E		1·91		0·91		*		*		0·55
N		1·77		0·46		1·09		*		0·09

1973—*continued*

Gauge	July		August		September		October		November		December	
	T.D.	%NiS	T.D.	%NiS	T.D.	NiS%	T.D.	%NiS	T.D.	%NiS	T.D.	%NiS
1 W		0·27		0·14		0·09		0·46		1·50		1·09
S	1·9	0·09	2·7	0·27	2·6	0·36	5·1	0·32	1·0	2·87	2·9	1·68
E		0·41		0·05		0·55		0·46		2·91		3·27
N		0·91		0·05		0·32		0·14		1·82		1·05
2 W		0·09		0·09		0·14		0·27		0·36		0·32
S		0·55		0·23		0·27		0·14		0·96		0·27
E	1·4	0·96	0·7	0·14	2·2	0·23	2·3	0·55	1·0	0·77	1·4	0·27
N		0·14		0·18		0·14		0·20		0·46		0·09
3 W		0·46		0·18		0·14		0·20		0·18		0·14
S	1·0	0·50	0·9	0·27	0·9	0·32	3·0	0·14	1·8	0·18	2·9	0·09
E		0·73		0·27		*		0·18		0·18		0·14
N		0·05		0·05		0·32		0·20		22·29		0·14

T.D. = Total Dirtiness.
% NiS = % 2 FeS NiS Pentlandite
* = Less than 0·05%

Appendix F

DUST TESTING PROGRAMME KALGOORLIE 1973

Monthly Total Dirtiness

Gauge	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	....	....	....	12·2	4·8	4·4	6·7	5·7	10·1	8·0	8·1	23·6
2	....	....	..	6·2	1·4	1·1	2·7	2·1	3·4	3·9	3·2	2·2
3	....	....	....	12·9	5·4	6·2	15·7	12·1	10·7	12·3	15·7	17·2
4	....	....	....	9·7	7·3	2·8	8·8	42·5	5·0	4·6	....	8·3
5	....	....	....	5·5	1·1	1·8	3·4	2·7	4·3	3·6	2·9	4·6
6	....	....	....	2·8	0·8	0·5	2·5	0·8	0·9	2·2	2·7	11·9
7	....	....	....	....	....	....	9·9	3·5	2·3	2·0	1·2	7·7
8	....	....	....	....	....	....	6·5	1·2	1·5	0·9	0·6	1·2
9	....	....	....	....	....	....	...	2·4	4·0	2·3	2·6	4·8
10	....	....	....	....	....	....	...	1·6	0·9	2·7	1·9	2·4
11	....	....	....	....	....	....	....	3·1	4·4	2·8	1·0	2·9
12	....	....	....	....	....	....	....	1·4	2·1	1·0	2·6	2·9

Appendix G

METROPOLITAN PARTICULATE (SMOKE) CONCENTRATIONS 1973

(Results are all expressed in micrograms per cubic metre)

Averages

Site	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Yearly Average	Highest 24 Hour Average	Lowest 24 Hour Average
Perth	2	2	3	3	6	4	5	7	4	3	3	4	4	27	0
Bayswater	2	1	1	4	3	4	5	2	1	1	1	3	2	17	0
Bentley	0	1	2	2	4	2	2	4	2	1	1	0	2	16	0
Claremont	1	1	0	2	3	9	3	3	2	1	2	2	2	19	0
Crawley....	1	1	2	1	4	3	3	4	1	....	....	....	3	31	0
Inglewood	3	2	3	5	5	4	8	3	3	1	3	2	3	25	0
Jandakot	0	1	0	0	1	1	1	1	0	0	3	4	1	22	0
Kardinya	3	0	0	0	2	2	2	11	1	1	3	3	2	229	0
Medina	0	0	1	0	1	0	1	0	0	0	1	2	1	9	0
Tuart Hill	1	1	3	4	3	3	....	....	....	....	....	....	2	14	0
Wembley Downs	1	1	2	2	3	2	3	4	1	4	3	2	2	18	0
South Coogee	2	0	0	....	....	....	....	....	....	....	....	....	1	9	0

Appendix H

METROPOLITAN SULPHUR DIOXIDE CONCENTRATIONS 1973

(Results are all expressed in micrograms per cubic metre)

Averages

Site	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Yearly Average	Highest 24 Hour Average	Lowest 24 Hour Average
Perth	17	14	18	20	9	24	8	13	8	20	17	17	15	178	0
Bayswater	1	3	3	4	1	4	2	1	0	3	5	0	2	17	0
Bentley	3	6	5	6	2	3	4	3	3	4	3	1	3	28	0
Claremont	4	6	3	7	1	3	1	1	1	4	2	7	3	42	0
Crawley....	3	3	4	5	2	2	1	1	0	....	....	....	2	24	0
Inglewood	4	7	4	5	4	3	0	1	1	7	3	4	3	58	0
Jandakot	0	0	3	3	3	3	1	1	1	5	1	0	2	106	0
Kardinya	5	4	6	6	2	2	0	0	1	4	3	4	3	42	0
Medina	2	2	2	6	18	6	7	8	3	3	2	0	5	84	0
Tuart Hill	0	1	1	4	3	5	....	....	....	....		....	2	12	0
Wembley Downs	2	2	4	3	4	3	0	1	0	3	2	2	2	39	0
South Coogee	6	8	3	....	....	....	....	....	....	....	....	....	7	93	0

Appendix I

SULPHUR DIOXIDE KALGOORLIE 1973

(Results are all expressed in micrograms per cubic metre)

	Monthly Average Average	Maximum Hourly Average	Minimum Hourly Average	Maximum Daily Average	Minimum Daily Average
January	0	0	0	0	0
February	1	114	0	6	0
March	4	429	0	80	0
April	0	0	0	0	0
May	....	....	....	....	....
June	....	....	....	....	....
July	0	0	0	0	0
August	1	172	0	14	0
September	0	0	0	0	0
October	1	114	0	9	0
November	0	0	0	0	0
December	1	114	0	14	0

Appendix J

METROPOLITAN OXIDES OF NITROGEN CONCENTRATIONS 1973
(Results are expressed in micrograms per cubic metre

Averages

Site	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Yearly Average	Highest 24 Hour Average	Lowest 24 Hour Average
Perth, 57 Murray Street	19	15	13	25	32	38	45	37	29	17	12	20	25	89	5
Claremont, Cnr. Queenslea Drive and Stirling Highway	6	9	15	23	35	25	40	53	71	34	27	18	30	252	0
Crawley, Caporn Street	7	7	9	17	20	25	21	25	9	....	....	....	15	99	0

Appendix K

HYDROGEN SULPHIDE KWINANA 1973
(All results in micrograms per cubic metre)

	Monthly Average	Maximum Daily Average	Maximum Three Hourly Average	Minimum Daily and Three Hourly Average
January	1	15	122	0
February	0	2	15	0
Mareh	1	8	61	0
April	0	3	31	0
May	0	2	15	0
June	Instrument Failure	Instrument Failure	Instrument Failure	0
July	0	2	15	0
August	0	0	0	0
September	0	2	15	0
Oetober	1	1	60	0
November	Instrument Failure	Instrument Failure	Instrument Failure	0
Decemher	1	6	60	0

Appendix L

PEDESTRIAN EXPOSURE TESTS 1973

Date	Site No.	Carbon Monoxide			Total Hydrocarbons			Nitrogen Oxides 10 hr. av.	Lead 10 hr. av.	Benz-∝-Pyrene 10 hr. av.	Particulates 10 hr. av.
		10 hr. av.	Max. hr. av.	Min. hr. av.	10 hr. av.	Max. hr. av.	Min. hr. av.				
		parts per million			parts per million			microgram per cubic metre	microgram per cubic metre	microgram per cubic metre	microgram per cubic metre
29/6/73	15	23·4	32·8	13·0	4·4	7·2	2·8	606	18·9	0·40	254
6/7/73	18	19·3	31·5	5·5	6·4	9·0	3·6	360	15·6	0·63	269
11/7/73	14	5·4	21·3	2·0	2·1	4·1	1·7	102	5·8	0·61	130
20/7/73	3	8·5	11·8	5·5	2·6	3·2	2·2	139	6·6	2·30	132
25/7/73	15	22·4	38·3	12·3	3·8	5·7	2·6	382	13·9	0·40	189
2/8/73	13	18·4	34·3	11·3	4·4	6·5	2·4	299	....	0·74	260
14/8/73	5	4·5	5·5	4·0	1·7	2·2	1·5	34	....	0·44	144
17/8/73	16	10·2	15·8	6·8	....	....	....	342	....	1·85	133
30/8/73	6	7·0	10·5	5·3	1·5	1·7	1·4	85	....	0·93	137
4/9/73	4	6·5	8·6	5·3	3·3	3·6	2·7	74	....	0·56	157
21/9/73	13	17·7	34·3	11·3	3·1	5·4	2·0	131	....	0·89	186
28/9/73	11	9·6	15·0	8·3	2·2	2·6	1·9	81	....	1·00	107
24/10/73	17	9·9	14·0	8·3	1·7	2·0	1·4	61	....	0·63	84
30/11/73	7	5·0	6·3	4·3	1·5	2·2	1·0	37	....	0·89	208
1/12/73	7	3·0	3·8	2·0	1·6	1·9	1·4	25	....	0·44	48
2/12/73	7	3·4	4·3	2·5	1·2	1·3	0·9	23	....	1·11	153
3/12/73	7	6·4	8·8	4·8	1·8	2·2	1·6	80	....	0·81	274
4/12/73	7	7·4	9·3	6·3	2·9	3·5	2·5	92	....	0·93	193
5/12/73	7	8·7	11·5	7·5	1·9	2·2	1·6	94	....	1·11	221
6/12/73	7	9·2	12·3	7·5	1·9	2·3	1·7	71	3·3	0·42	238
7/12/73	7	9·0	12·5	6·5	2·7	3·5	2·1	95	4·3	0·24	188
8/12/73	7	9·2	11·5	7·3	2·2	3·3	1·4	56	3·2	0·29	222
9/12/73	7	6·4	7·5	5·8	1·5	2·0	1·2	35	1·5	<0·02	104
10/12/73	7	10·4	12·5	9·0	2·1	2·3	2·0	112	4·1	0·29	245
11/12/73	7	10·3	12·8	8·5	2·5	3·0	1·7	91	4·2	0·35	225
12/12/73	7	7·6	9·3	6·5	1·9	2·3	1·6	86	3·7	0·58	163
13/12/73	7	6·5	9·5	5·5	1·8	2·6	1·6	68	3·0	0·49	184
14/12/73	7	6·9	8·5	6·0	1·6	1·8	1·4	78	3·2	0·26	197
			max.	min.		max.	min.				
1973		9·7	38·3	2·0	2·5	9·0	0·9	134	6·5	0·70	180

Appendix M

24 HOUR EXPOSURE TESTS TAKEN AT 57 MURRAY STREET, PERTH, 1973

Carbon Monoxide—Results expressed in parts per million

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Monthly Average	3·8	3·5	3·1	3·3	3·5	2·9	3·5	4·7	3·6	5·0	4·0	3·7
Highest 24 hour	6·7	5·7	5·3	4·8	5·0	5·0	5·9	6·3	5·0	7·4	5·4	4·6
Lowest 24 hour	1·9	2·4	1·9	2·2	2·0	0·9	3·0	3·5	2·6	3·7	3·3	2·7
Highest 8 hour	8·9	6·4	6·5	7·0	7·6	6·5	7·5	8·8	5·9	8·0	5·5	5·1

Annual Average=3·7 ppm

Appendix N

TOTAL HYDROCARBONS, 57 MURRAY STREET, PERTH, 1973

Results expressed in parts per million

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1973
Average	0·6	0·8	1·0	1·2	1·5	1·5	1·7	1·8	1·6	1·5	1·3	2·3	1·5
Maximum Day	0·8	1·0	1·3	1·5	1·9	2·5	2·1	2·3	1·8	1·9	1·7	2·6	
Minimum Day	0·5	0·5	0·8	1·0	1·2	0·9	1·3	1·3	1·2	1·3	1·1	2·0	

Appendix O

CAR PARK TESTS 1973

Date	Site	Carbon Monoxide			Total Hydrocarbons			Nitrogen Oxide 10 hr. av.	Lead 10 hr. av.	Benz-α-Pyrene 10 hr. av.	Particulates 10 hr. av.
		10 hr. av.	Max. hr. Average	Min. hr. Average	10 hr. av.	Max. hr. Average	Min. hr. Average				
		parts per million			parts per million			microgram per cubic metre	microgram per cubic metre	microgram per cubic metre	microgram per cubic metre
28/3/73	No. 5	22·8	29·8	6·0	5·1	6·1	3·4	58	3·1	0·39	34
4/4/73	Canterbury Crt.	3·2	5·5	1·8	1·9	2·9	1·5	100	2·1	0·52	114
12/4/73....	Cable House	8·6	14·5	5·5	3·7	6·0	2·7	80	....	....	....
18/4/73....	Cable House	25·1	42·5	14·0	6·4	9·1	5·3	154	8·2	....	152
24/5/73....	Mt. Newman House	38·2	70·8	26·3	6·3	9·3	5·3	345	19·5	1·48	183

Appendix P

EMISSIONS OF FLUORIDE FROM SUPERPHOSPHATE WORKS

		Kwinana	Bayswater	Bunbury	Albany	Geraldton	Esperance
Average emission over 24 hours at maximum production	kilogram per hour	0·10	0·14	0·17	0·05	0·23	0·27
	pounds per hour	0·22	0·30	0·38	0·11	0·50	0·60

Appendix XII

State X-Ray Laboratory

B. E. King, M.Sc., B.Sc., Physicist-in-Charge

Legislation to control hazards to health arising from the use of ionising radiation was passed by the State Parliament in 1954, and became known as the Radioactive Substances Act. Regulations under this Act were gazetted in 1958 and the first licences for the use of x-ray equipment and radioactive substances were granted in 1959.

Amendments have been made to the Act on a number of occasions and currently it requires that x-ray equipment used by medical practitioners or dentists for the taking of radiographs be registered and that all other users of x-ray equipment and radioactive substances be licensed. Licences are granted and registrations approved by the Minister for Health on the advice of a committee of experts, the Radiological Advisory Council. The members of the Council represent professions with special knowledge in the uses and effects of radiation. Dr. D. D. Letham, Chairman of the Council since 1965, retired in 1973 and his place was taken by Dr. J. C. McNulty, Director of the Occupational Health Division, of the Department. The Council has for many years been advised on medical and dental matters by two advisory sub-committees, and in 1973 it was decided to establish a third committee to advise on chiropractic radiography matters.

Table 1 shows the numbers of licences and registrations current on 31st December, 1973. During the year the number of licences increased by 14·5% and registrations by 2·6%. The Radiological Advisory Council held four meetings, the Medical Advisory Committee four, and the Dental Advisory Committee one.

Table 1

LICENCES AND REGISTRATIONS

Licences current at 31*st December*, 1973—

Medical and Dental	139
Non-Medical	157
Combined Medical and Non Medical	2
Total	298
Net increases in licences in 1973	35

Registrations current at 31*st December*, 1973

Medical	40
Dental	223
Total	263
Net increase in Registrations in 1973	6

The Radioactive Substances Act is now twenty years old and in previous annual reports, references have been made to its shortcomings which have inhibited proper control of radiation hazards. The Council has made detailed recommendations for the revision of the Act but the necessary legislation has not yet been drafted. A particularly important need is for legislation to control the use of sources of non-ionising radiation such as microwave ovens. There are ovens in use which exhibit leakage of microwave radiation many times the maximum level recommended by the National Health and Medical Research Council.

DUTIES OF THE LABORATORY

The Physics Division of the Laboratory is responsible to the Radiological Advisory Council for the administration of the Radioactive Substances Act. To this end, the Laboratory provides the necessary secretarial, administrative and technical facilities. The Laboratory assists users of ionising radiation with advice on radiation physics and with a calibration service for x-ray equipment and radiation measuring instruments. The Laboratory conducts an educational programme for users of radiation and provides a film badge monitoring service. Broadly, the Laboratory is concerned with delineating the nature of the exposure of the population radiation and with measures for the control of this exposure. The work of the Laboratory is described in more detail in succeeding sections of this report.

FIELD WORK

Laboratory personnel make regular visits to the premises of users of x-rays and radioactive substances. New users are advised on radiation protection requirements and existing establishments are visited to ensure that previous recommendations are being followed and that a satisfactory standard of radiation protection is being maintained. These visits contribute to the maintenance of radiation exposure of personnel at a low level and minimise the possibility of a serious radiation accident. In addition to inspecting the facilities and safety procedures, the Laboratory's Radiation Officers assist those concerned to make more effective use of radiation by advising on areas within their competence, such as medical and veterinary radiography.

The frequency of visits is determined by the extent of the radiation hazard presented. Industrial radiography operations are visited a number of times each year whereas small hospitals and medical and dental practices may be visited at intervals of one to two years.

Due to their remote locations, it is not possible to visit some hospitals and industrial establishments as often as is desirable. During 1973, the number of visits exceeded 500, an increase of more than 60% over 1972. The additional radiation officer appointed in 1972 made this increase possible. Ten country tours were undertaken, two of which were by air.

The measurement of the x-ray output and the light emission of fluoroscopic x-ray units is now a routine practice. These measurements are made to ensure that the equipment is operated according to the recommendations of the International Commission on Radiological Protection.

FILM BADGE RADIATION MONITORING SERVICE

A film badge radiation monitoring service has been provided for 16 years. It is a valuable means of detecting exposure to radiation of persons who use x-rays and radioactive substances. The number of persons monitored in 1973 was 2 001, an increase of 7·3% over the 1972 figure. 23 974 films were processed, a rise of 9·7%. The numbers monitored in various occupational groups are shown in Table 2.

Table 2

NUMBER OF PERSONS USING FILM BADGE MONITORING IN 1972 SHOWN BY EMPLOYER GROUPS

Medical, Hospitals	370
Medical, General Practitioners	107
Medical, Radiologists and Miscellaneous	109
Chiropractors	27
Dentists	755
Non-Medical	633
Total	2 001

EDUCATION

An important aspect of the Laboratory's work is the education of users of x-ray equipment and radioactive substances. Many professional groups are untrained in this area, and their members frequently have no experience of either the use of radiation or radiation safety. The Laboratory continues to give short courses on radiation safety and to lecture on radiation as part of formal courses or to give individual lectures to various groups. The following educational activities were undertaken in 1973.

Short Courses

Radiation Safety in the Use of Radiation Gauges in Industry (Two courses).
Medical radiography in country hospitals.

Lecturing in Formal Courses conducted by Educational bodies

Mt. Lawley Technical College	— Health Surveyors
	— Health Technologists
Perth Dental Hospital	— Dental Nurses
Sir Charles Gairdner Hospital	— Nurses

Lectures given to other groups

Individual lectures were given to the following groups: Australian Dental Association, Education Department (Science Teachers), Royal Australian Chemical Institute, Australian and New Zealand Association for the Advancement of Science, Society of X-Ray Technology, Association of Therapy Technicians.

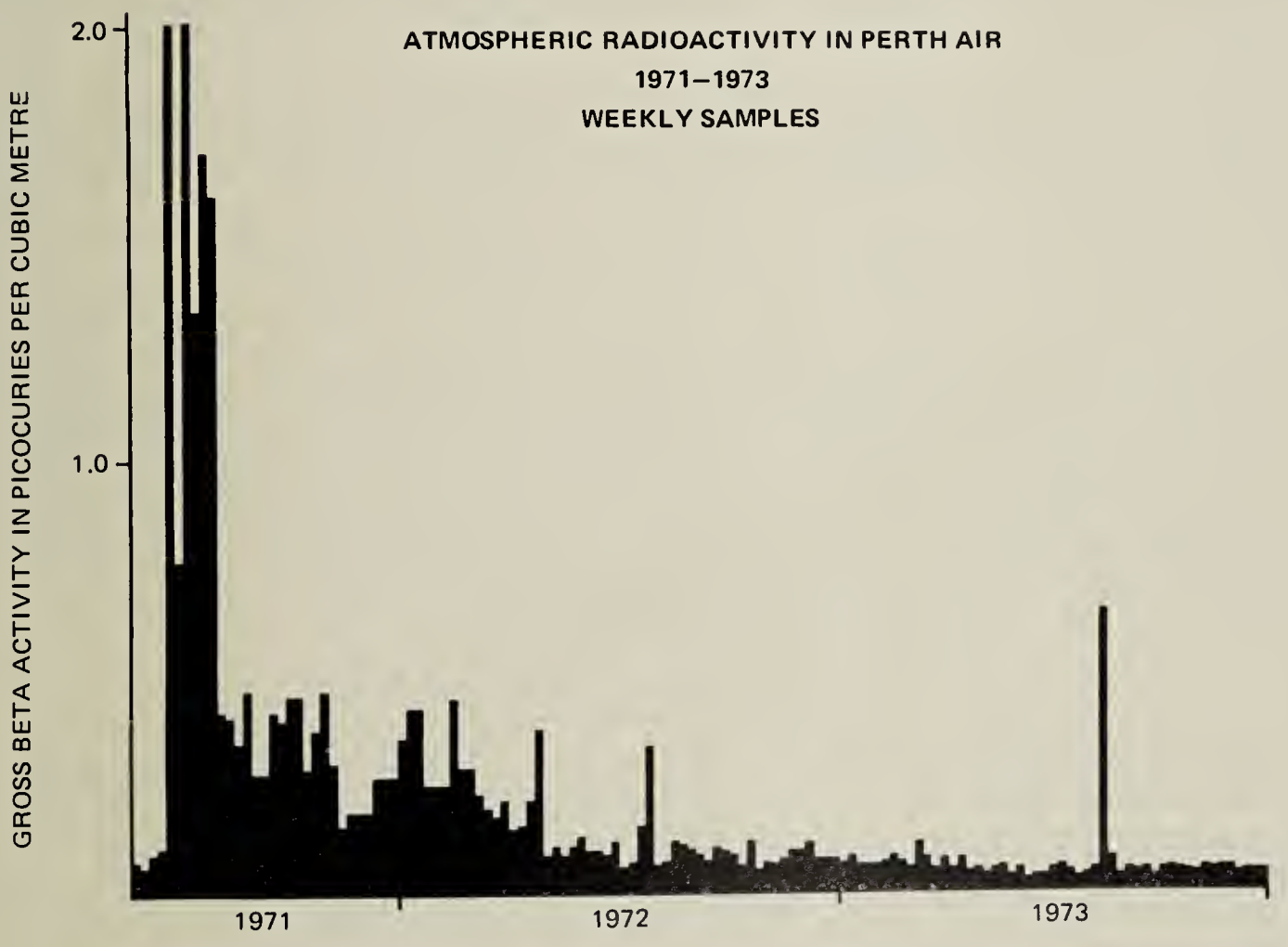
RADIATION MONITORING AND COUNTING EQUIPMENT

The Laboratory is equipped with a range of monitoring instruments for the field measurement of alpha, beta and gamma and x-radiation. The gamma and x-ray sensitive instruments cover a wide range of radiation energies from the low energy x-ray emission of colour television receivers and discharge tubes used for demonstration purposes in schools, to the high energy gamma rays from Cobalt–60.

Low level gamma counting equipment with a 512 channel analyser is installed in the laboratory for the measurement and analysis of gamma emitting radioactive substances. This equipment utilises a 3 in. x 3 in. Sodium Iodide crystal and is to be augmented during 1974 by a pure germanium detector. Equipment was delivered during the year for the measurement and analysis of alpha and beta radiation also using a semiconductor detector.

ENVIRONMENTAL RADIOACTIVITY

The Laboratory has a continuous monitoring programme for radioactivity in rainwater and the atmosphere. Gross beta activity in air and rainwater samples is measured routinely and gamma analysis is carried out when warranted. Short term increases in radioactive fallout were again detected following the French nuclear tests in the Pacific Ocean during 1973. The variations in the weekly gross beta levels for the period June 1971 to December 1973 are shown in the figure.



There has been intense public interest in these tests in recent years and many requests for information are received from individuals, groups and the news media.

RADIATION STANDARDS

The Laboratory maintains a Sub-Standard X-Ray Dosemeter and Standard Radioactive Sources, to permit calibration of a wide range of monitoring equipment and superficial therapy x-ray equipment. Seventeen monitoring instruments were calibrated during the year.

TECHNICAL ADVICE

Laboratory staff spend considerable time in giving advice to applicants for licences and registrations, to licencees and to members of the public, on radiation protection and radiation health problems. This includes advice on the design of radioisotope laboratories and on radiation protection in industrial, medical, dental, chiropratic and veterinary establishments.

NON IONISING RADIATION

The Laboratory is now responsible for monitoring sources of non-ionising radiation such as microwaves and lasers. Therre is no legislation covering the hazards from these radiations, but the users are advised on protective measures. Microwave ovens are used in many delicatessens, restaurants and take away food shops for the rapid heating of food. Ovens which are inadequate in their design or maintenance may leak microwave radiation which is potentially injurious. 73 ovens were inspected for the first time during the year and 20 were reinspected. The rate at which new ovens are being installed is now beyond the ability of the Laboratory to carry out inspections.

However, it has been found that generally leakage from recently introduced models of ovens is below the N.H. and M.R.C.'s recommended limit of $5mW/cm^2$ at 5 cms from the surface.

There are a number of earlier designs in use and there are a number of examples of one model which exhibit leakage many times in excess of the N.H. and M.R.C. figure The owners are being encouraged to remove them from service.

NATIONAL RADIATION DOSE SURVEY

The National Health and Medical Research Council survey to determine genetic and mean bone marrow doses to the Australian population which commenced in 1970 was resumed in Western Australia in 1973 with the measurement of patient doses in the medical and chiropractic uses of x-rays for diagnostic purposes. The Laboratory provided the necessary staff and facilities for the distribution and collection of the radiation dosemetres used for the measurement of patient dose. A radiation officer was assigned to this work for a period of two months.

RADON IN UNDERGROUND MINES

In some parts of the world concern has been expressed that the levels of the decay products of radon gas in the air in underground mines may be responsible for an increased incidence of lung cancer among underground miners, primarily in iron ore mines. With the cooperation of the Australian Radiation Laboratory and the W.A. Mines Department, a survey of radon and radon daughter levels in gold and nickel mines in the eastern goldfields region was carried out in November, 1973. The preliminary results indicate that the levels in the W.A. mines surveyed are not a cause for concern.

STAFF

Dr. B. Hartley, formerly with the James Cook University at Townsville joined the staff as a Physicist early in 1973.

ACKNOWLEDGEMENTS

It is a pleasant duty to report that the staff of the Physics Division are conscientious and enthusiastic in the performance of their duties. The cooperation of the staff of the Engineering Division is also of great assistance.

Appendix XIII

Report on Technical Information Service and Library

J. F. Woolcott, M.B., Ch.B., Medical Officer-in-Charge

This year was very much a year of staff changes. The Librarian left at the end of 1972 for family reasons and a new Librarian, Miss M. McAlinden started in January, 1973, and later in the year a new Library Assistant. The main development, however, was the beginning of a Branch Library in the State Health Laboratory Service with the appointment of a fully-qualified Librarian, Mrs, Janet Davis. The S.H.L.S. Library will operate from that Service's new building. It is anticipated that at least two other Branch Libraries will be established in the next 2-3 years.

Work done by the main P.H.D. Library is shown in the following statistics.

INTERSTATE AND OVERSEAS LOANS

Country or State	1969	1970	1971	1972	1973
New South Wales	19	37	24	30	36
Victoria	24	19	11	30	20
Queensland	2	12	6	17	5
South Australia	14	17	4	12	12
Tasmania	2	9	12	11	11
Northern Territory	3	1	2	3	3
A.C.T.	....	2	2	5	15
New Zealand	....	2	....	1	2
Papua New Guinea	....	....	....	4	10
Totals	64	99	61	113	114

INTRASTATE EXTERNAL LOANS

W.A.I.T. (including School of Mines)	168
Medical Library	125
University of W.A.	92
Department of Agriculture	58
Hollywood R.G.H.	55
Government Chemical Laboratories	44
C.S.I.R.O.	39
Fremantle Hospital	28
Library Board	28
Public Works Department	22
Mental Health Services	21
Fisheries and Fauna	17
Princess Margaret Hospital	15
Nurses' Library, R.P.H.	13
Western Mining Corporation	11
Others (22 in all)	70
Total	806

This compares with 545 in 1969, 860 in 1970, 981 in 1971 and 996 in 1972.

INTERSTATE EXTERNAL BORROWINGS

Source	1969	1970	1971	1972	1973
New South Wales	17	11	9	34	35
Victoria	14	24	15	37	27
South Australia	14	41	29	78	82
Queensland	....	....	3	9	7
Tasmania	2	1	....	....	....
A.C.T.	4	8	13	47	71
Totals	51	85	69	205	222

It is obvious from a comparison with the Interstate and Overseas Loans table that this library is now borrowing interstate far more than it is lending.

INTRASTATE EXTERNAL BORROWINGS

Medical Library	230
University of W.A.	89
Library Board	75
Department of Agriculture	33
Government Chemical Laboratories	26
W.A.I.T.	11
Mental Health Services	7
C.S.I.R.O.	6
Fremantle Hospital	4
Nurses' Library, R.P.H.	4
Education Department	4
Hollywood R.G.H.	3
K.E.M. Hospital	3
B.P. Refinery	1
Secondary Teachers College	1
Total	497

This compares with 249 in 1969, 372 in 1970, 265 in 1971, 662 in 1972. This table and that on Intrastate External loans when compared show how heavily the W.A.I.T. leans on this library and how in turn, this library relies on the Medical Library.

NEW PUBLICATIONS

A total of 1 061 new publications were received during the year, the main recipients being: P.H.D. Library 504; S.H. Laboratory Service 55; Bunbury Regional Hospital 50; State X-Ray Laboratory 46; Osborne Park Hospital 35; Kalgoorlie Regional Hospital 30; Child Health Services 29; Health Administration Course (Medical Dept.) 28; Geraldton Regional Hospital 27.

The figure of 1 061 for 1973 compares with that for 1969 of 759, 1970 of 919, 1971 of 1 104 and 1972 of 889. Publications in 1973 were supplied to 63 sub-libraries.

JOURNALS

Subscriptions were taken out to an additional 20 journals. Three ceased publication so the total journals received now numbers 700.

During 1973 the first large-scale orders were placed for microfilm copies of files of journals. It is anticipated that a microfilm reader print-out machine will be obtained as soon as possible after the main bulk of the Department (including the Library) moves to a new building, hopefully in 1974. Space expansion for the Library becomes increasingly urgent.

GENERAL

The Library's work continues to expand steadily as extra material is acquired and as new staff or whole new sections are added to the Department. In the present cramped conditions the high morale of the Library staff and their genial co-operation are quite remarkable. My thanks go to them and to the many libraries and librarians with whom we have the most cordial relationships.

43996—(11)

Appendix XIV

Health Surveying Branch

J. F. Slattery, M.R.S.H., F.A.I.H.S.

Chief Health Surveyor

GENERAL

Primarily the function of the Branch is to measure and control environmental hazards relating to human health.

Consequently, the Officers of the Branch are involved in a wide range of activities varying from routine supervision of Community Health standards to conducting specific investigations and surveys of particular aspects of environmental health, and introducing the necessary preventions, control and surveillance programmes.

A summary of activities for the year 1973 is set out in the following report :—

1. STAFF

The continued industrial and population expansion of the State is resulting in increased demand upon the time and expertise of the individual officers of the Branch.

Although staff increases were granted during the year, the impact was largely negated by the annual leave entitlement being increased from three to four weeks, and the general growth of activity.

However, as predicted, the creating of five sections with clearly identifiable areas of environmental Health Activity has allowed more effective use of available staff, and a vastly improved service to the Public.

The sections which were introduced at the commencement of the year comprises :—

(a) Health General (Sanitation)

(b) Food and Liquor

(c) Public Buildings

(d) Country Meat Inspections and Abattoirs

(e) Land development and sub-division.

Each sections activity is controlled and supervised by a Grade 1 Officer in Charge and other officers are given experience in all areas by rotation through the various sections.

2. TRAINEES

The " Trainee " Health Surveyor scheme which was introduced approximately 6 years previously provides for young men interested in a career in Environmental Health to be appointed to the Branch as a " Trainee " where he carries out specific duties, and gains practical experience while completing the formal course of study for the prescribed Diploma.

Upon obtaining the Diploma a " Trainee " is eligible for appointment to the permanent staff of the Branch.

From its inception the scheme has been successful, and each consequential vacancy advertised, has attracted numerous applicants from both within and outside the service. Four " Trainees " are currently employed, and all successfully passed their respective end of the year examinations.

3. HEALTH LIAISON GROUPS

These groups which were formed to enhance communication between the Department and the Local Authority Health Surveyor have now operated successfully for almost ten years, and a successful future appears assured.

The four groups met regularly during the year with a Departmental Officer present on most occasions.

Subjects discussed included Education standards for Health Surveyors, Food hygiene practices, hygiene standards of Country Abattoirs, standards for Meat Inspectors practice and various matters relating to Departmental policy.

4. ROYAL SHOW

As in previous years supervision of all aspects of environmental health and public safety was the responsibility of Departmental Officers who were in attendance for all the periods the grounds were available to the Public.

Aspects supervised included standards of hygiene of food handling and liquor premises, hygiene of personnel and public safety aspects of exhibits and side shows.

Where evident, corrective action was required.

The standard of sanitation at this venue continues to improve each successive year, which is largely due to the high level of co-operation which exists between the Royal Agricultural Society and the Officers of this Branch.

5. HEALTH SUPERVISION—NORTH WEST

During the year under review the method of maintaining Health Supervision in the North West areas was changed to meet the new circumstances resulting from the forming of two new Local Authority districts of East Pilbara and West Pilbara. The East Pilbara Shire District now includes the mining town of Goldsworthy previously within the Port Hedland Shire District and the West Pilbara includes Onslow, Tom Price, Paraburdoo and Pannawonica previously included in the Roebourne Health region.

Under the previous arrangement, the Roebourne Health Region was supervised by a Departmental Officer resident in the district, and Health supervision of the inland North West areas from Marble Bar to Shay Gap was maintained by regular visits by a Departmental Officer.

With the new arrangement, the Roebourne Health Region was disbanded, the Roebourne Shire Council engaged a Health Surveyor on a full time basis, and the Departmental supervision of the inland areas was extended to include the East and West Pilbara Districts.

With the approval of the Commissioner of Public Health it was arranged that the service to the Pilbara Districts in the first instance, would be for a period of twelve months to allow Departmental assessment of needs, and to establish guide lines for future planning.

During this period the affected Local Authorities would not be required to contribute to the cost of the service.

However, during the year the West Pilbara Shire Council engaged a Health Surveyor on a full time basis, and the arrangement is currently being reviewed.

The Kimberley Health Region, which comprises the Districts of Derby, Broome, Kununurra, Wyndham and Halls Creek is supervised by a Departmental Officer resident at Derby.

In recent years this region has almost doubled in population and development, and re-organisation of the service is currently being considered.

6. PUBLIC BUILDINGS

The Branch activities relating to Part IX of the Health Act (Public Buildings) continued to expand, particularly in relation to the number of new projects submitted for examination, which are increasing in number each year.

During 1973, four hundred and thirty four new building activities classified as Public Buildings, were submitted, representing an increase of 25% over the two previous years.

As each new project requires examination of plans and specifications, consultation with the Examining Engineers of the Public Works Department, and constant on site inspections during the structural stages of the building to ensure compliance with the required standards of Health and Public safety, the Public Building activity for the current year was largely directed towards examination of the new projects. Never the less regular supervisory visits of Public Buildings were maintained throughout the State, and Public Building safety aspects examined at special functions such as open air concerts and the Royal Show.

Irregularities in Public Health and Safety frequently occur in existing Public Buildings as a consequence of change in usage, occupancy or proprietor; In most instances these are discovered only by routine supervisory examinations: Examples of irregularities discovered during the year included the use of combustible plastic linings to air conditioning ducts, unauthorised locks on escape doors, the use of flammable drapes and curtains, and incorrect electrical wiring and installations.

Action to rectify was taken on each instance.

A particular example which instances the necessity for constant surveillance of the Public Safety aspects of a Public Building is shown by the case of a Perth Night Club, which was not provided with a rear escape stair until required by this Department. During the year, a sudden fire engulfed the front entrance while sixty patrons were in attendance.

All patrons escaped without harm by the rear stair.

The survey commenced the previous year, to determine standards of safety and hygiene of swimming pools and chlorine rooms and to promote educational programmes continued, but was curtailed for a period due to an extended illness of the Officer specialising in the area.

This activity will be continued in the forthcoming year.

The efficiency of the " maximum accommodation " notices evolved for use in Public Buildings, was examined, and a survey conducted to determine the extent of use and efficiency of the radio active exit signs, introduced the previous year.

The " maximum accommodation " notices were designed to assist Public Health Officials and members of the police force in controlling over-crowding in places of entertainment.

As the notices are displayed in a prominent position and clearly show the permitted number of people, an immediate assessment of over-crowding can be made and the doors closed.

Originally intended for distribution to all places of public entertainment, the survey revealed this to be unnecessary and the notices are now issued only when a complaint is made or at the request of the proprietor.

The radio active exit and directional signs, which are clearly visible and do not require batteries or electrical wiring are being extensively used, particularly in the metropolitan area, and a wider use is anticipated.

7. CARAVAN PARKS

Compared with previous years there was a marked decline in the extent of new Caravan Park development during the current year.

In the country districts, nine new parks which had been commenced the previous year were completed, and commenced operating, and a further ten carried out extensive upgrading and additions.

No new parks were established in the metropolitan area.

Constant supervision is required to ensure that Caravan Parks are maintained at acceptable standards of health and hygiene, and one Officer is maintained full time on this activity.

All Caravan Parks throughout the State were examined by the Departmental Officer at least once during the year; plans of new projects and extensions to existing developments were examined and developers advised of requirements: Proprietors of existing parks were advised on methods of obtaining improved standards, and meetings were held with affected Local Authorities where necessary.

A recurrent problem is the extent of overcrowding which occurs at Caravan Parks during holiday and festive seasons, health hazards occurring from the resultant over taxing of facilities and malfunctioning of disposal systems.

During the year the various regulations and bylaws relating to Caravan Parks were reviewed, various sections were amended, and the Cabin and Chalet Bylaws made under the Local Government Act were re-framed and are now termed the Holiday Accommodation Bylaws.

There is increasing public interest in the form of accommodation provided for in these bylaws, and it appears probable that wide use of this form of accommodation will occur.

8. MEAT INSPECTION

The provision of Meat Inspection Services at four major metropolitan abattoirs is a responsibility of the Branch and was maintained during the year.

The Officers engaged on meat inspection duties are also responsible for works sanitation, hygiene of personnel, supervision of methods of storage and transport of carcase meat, and the supervision of practical tuition of student Health Surveyors.

Although 32 officers under the supervision of a Senior Officer are engaged on this activity, the introduction of modern machinery and sophisticated techniques of food animal preparation at metropolitan abattoirs, coupled with the special inspection techniques required by some importing countries has resulted in a fully extended staff, with no allowance for contingencies.

The situation was recognised Departmentally, and the 1973 staff budget provided for an additional staff for engagement in the meat inspection area.

It is anticipated that the additional staff will be recruited and commence duties early in the new year.

The co-operative arrangement for this Department to identify and collect specimens relating to animal disease for submission to the Department of Agriculture was continued during the year.

Specimens relating to Tuberculosis in pigs, cysticercus ovis in sheep, and polyarthritis in pigs were collected and forwarded to the Chief Veterinary Officer of the Department.

Details relating to inspection of food animals throughout the State are shown on Appendix A.

9. METROPOLITAN FLY CAMPAIGN

This is an annual situation conducted on co-operation with metropolitan Local Health Authorities and was again conducted along similar lines to previous years. The relevant details are shown as Appendix B.

10. MOSQUITO CONTROL

This is a constant activity of the Branch. Liaison is maintained with affected Local Authorities and individual complaints examined and corrective procedures advised.

Specific examinations were conducted of portions of the Canning River wet lands at the request of the affected Local Authority, and various areas of the South West of the State were examined at the request of formal civic groups. Various methods of control are currently being discussed with the affected groups.

A further State wide study to establish the geographical incidence of the various species of mosquito is currently being considered, and may be introduced in the forthcoming year.

11. SEPTIC TANKS

A total of 9 779 plans were examined and approved during the year, by comparison in 1972, 9 715 plans were examined and 1971, 8 787.

During the year the relevant regulations relating to septic tanks (Bacteriolytic Treatment of Sewage and Disposal of Effluent and Liquid Waste Regulations) were metricated and a number of amendments incorporated.

The amendments provide for the use of fibre glass septic tanks, an evaporation type of disposal system, quality control testing of septic tank components, and specifications for waste stabilisation ponds.

It is expected that the re-drafted regulations will be promulgated during the forthcoming year.

The testing of chemical additives to chemical closets, and septic tanks and disposal systems was continued: Twenty eight varieties of chemicals were submitted and twenty six were approved.

12. LAND SUITABILITY

Requests from the Town Planning Board for an opinion on the suitability or otherwise of land proposed for building purposes totalled 225 for the current year made up as follows :—

New Metropolitan Sub-divisions	167
New Country Sub-divisions	22
Area Surveys	30
Special examinations relating to appeals	6
	225

In each instance the ground water pattern was determined and where applicable, the particular land treatment conditions specified.

In recent years, this activity has broadened as a consequence of increasing reports from other Departments, Local Authorities and members of the Public, and during the year, in addition to the Town Planning Department proposals examined, 27 particular land usage proposals were examined at the request of the Local Government Department, 5 for the Lands Department, and 12 areas of land proposed for intensive housing development were examined and reported upon for the State Housing Commission.

Sixteen Local Authorities requested advice on the land treatment required to make suitable for building purposes various areas of land within their districts, and later in the year, at the request of the Water Purity Committee an extensive survey was made to determine the potential usage of land adjacent to the contour channels within the water catchment area.

13. COMMUNITY WASTE DISPOSAL

Departmental investigations regarding total solid and liquid waste production and disposal in the Metropolitan area were commenced in 1971 and completed in 1973.

The completed details were presented to the Technical Advisory Sub-Committee of the Metropolitan Refuse Disposal Committee to serve as base line data for the report on Community Waste Disposal in the Perth Metropolitan area.

The investigation data included details on the following matters :—

1. Domestic Solid Waste Production.
2. Total Solid Waste Production.
3. Analysis of components and relative percentage of domestic and total solid wastes.
4. Combustibility ratios of domestic and total wastes.
5. Production and Disposal of the following Special Wastes :—
   (a) Animal Bodies
   (b) Food Processing Wastes
   (c) Glass
   (d) Municipal Tree Prunings
   (e) Paper
   (f) Rags
   (g) Scrap metal including car bodies
   (h) Tyres
   (i) Wet Refuse (Pig Swill)
6. Sanitary land fill areas completed since 1950.
7. Sanitary land fill area requirements till year 2000.
8. Sanitary land fill area availability.
9. Sanitary land fill technique.
10. Composting techniques.
11. Compaction technique.
12. Pulverisation techniques.
13. Transfer Station techniques.
14. Incinerations techniques.
15. Volume and components of liquid waste removed and disposed of at special sites.
16. Volume and components of liquid waste disposed of on site.
17. Volume of Toxic and Hazardous Substances.
18. Liquid Waste, Toxic and Hazardous Substances Disposal Techniques.

14. PEST CONTROL

There is an increasing demand for the services of this Section. The number of schools and other types of Government Buildings for which the section is responsible for Pest Control treatment have increased, and as most chemicals used in pest control work can be used with safety only when premises are vacated, the extent of " out of hours " work has increased accordingly. During the year plans were completed to extend the Section's activity to all buildings controlled by the Department of Community Welfare, including the North West areas, and other matters currently being examined could result in pest control assistance being given to the Department of Community Health. As the existing staff are already working to capacity, additional staff will be required to meet the additional work load.

In addition to specific pest control treatments, other activities of the Section include :—

(a) Training of Pest Control Officers at Government Institutions.

(b) Training of Mature age Fly Control Officers for employment by Local Health Authorities.

(c) Conducting of experiments to determine fly breeding potential of a locally marketed tumbler composting unit.

(d) Formulating pest control chemicals.

(e) Examination of various country hospitals to examine specific problems and evolve treatment methods.

(f) Two hundred and sixteen inspections relating to fly control were made of Government hospitals and institutions, eighty eight of metropolitan abattoirs, two hundred and forty of metropolitan skin drying sheds, fifty of metropolitan sewerage works and sixty four of railway truck washing out yards.

Details of specific insect pests, rodent and animal eradication treatments are shown hereunder :—

Item	*No. of cases*
Cockroach	259
Termite	90
Red Back Spider	54
Mosquito	40
Silverfish	30
Honey Bee	6
Flea	22
Ant	22
Pigeon	6
Fly	13
Pigeon Mite	3
Drug Store Beetle	3
Bed Bug	2
Sand Fly	2
Clothes Moth	2
Pantry Pest (Weevil)	2
Carpet Beetle	3
Rodent	398
Cat	4

Summary for year ending 31st December, 1973.

Total number of Inspections	658
Total number of insecticides and rat bait treatments	961

15. FOOD AND LIQUOR

As predicted, this is an area of activity and complexity which is continuing to expand. The very nature of the food industry with its increasing sophistication in presenting to the public new trends in all aspects of food, including varying compositional standards, additives, presentation, packaging, advertising and labelling has resulted in added responsibility.

The need for supervision and education to encourage and promote conditions in the manufacture and preparation, storage, delivery, sale and serving of food which will eliminate risk to health and provide a safe, clean and aesthetically attractive product is of utmost importance, as extensive food spoilage continues to occur with an outbreak of food poisoning sometimes being the consequence.

A particular example occurred during the year when more than forty people became ill following drinking flavoured milk at a country fair.

Following an investigation to establish cause and to affect remedial action, all personnel engaged at the particular premises were given an intensive education programme relating to handling of food stuffs. A safe milk supply is the result.

That the public have become more aware of the health hazards related to contaminated and spoiled foods is shown by the number of individual complaints received which continues to increase each year.

During 1973, 366 complaints were received made up as follows :—

Asparagus	1
Baked Beans	4
Beer	2
Biscuits	2
Bread	30
Cakes	13
Cereals	13
Coffee	2
Confectionery	15
Cool Drinks	26
Eggs	3
Fish	16
Food Handling	21
Food Premises	33
Fruit (canned)	2
Fruit (dried)	7
Fruit (fresh)	5
Fruit Juice	15
Gravox	1
Honey	1
Jam	1
Jelly	1
Meat and Meat Products	51
Milk and Milk Products	38
Pet Foods	4
Pickles	1
Puddings	3
Sauce	9
Shell Fish	32
Take Away Food	2
Tea	1
Vegetables	9
Water	1

Sampling

Various programmes of both a special and routine nature resulted in the taking of 2 014 samples of food products of which 787 were for microbiological examination and 1 227 were for chemical analysis. An additional 58 samples of a miscellaneous nature were also taken.

Other special projects included :—

(i) The examination of various foodstuffs for pesticide residual and heavy metals.

(ii) Examination of various meat and fish products to assist in the determination of a microbiological standard for these particular foods.

(iii) Determination of compositional standards of fruit juices and fruit juice drinks.

(iv) Examination of certain toys for presence of toxic materials.

(v) Examination of imported crockery ware for presence of lead.

Imported Foods

Overseas—Fremantle Wharf

The need for supervision in this area is increasing in importance as the extent and widening range of imported food increases.

Routine sampling was conducted of various foods for compliance with compositional standard, presence of added colours, additives, and for accepted microbiological standard.

Assessment of damaged and contaminated foodstuffs continued to be an important responsibility and quantities of food products shown to be not fit for human consumption were condemned and disposed of which included—

Coconut—65 bags at 100 lb./bag

Cheese—262 cartons/cases

Can/fish/meat—177 cartons
—1 384 tins from $1\frac{3}{4}$ oz.–16 oz. average

Can/fruit/vegetables—656 cartons
—4 101 tins from 5 oz.–16 oz. average

Frozen Fish—162 cartons

Olive Oil—72 tins, average contents 1 gallon
Olives—139 tins, average size 13 Kg.
Dates—3 020 lbs.

Miscellaneous—3 cartons dried fish
—5 x 50 lb. bag lentils
—3 x 50 lb. bag monsodium glutomate
—3 bags cocoa powder
—9 bags tapioca
—10 x 1 cwt. bags Nitrate of soda

Total Weight: Approx. 18 330 Kgs.

Total number of condemn certificates=225

A total of 3 405 805 kilograms of frozen fish was examined during this year and fees of $5 676.34 collected.

Intrastate—Kewdale

Necessary supervision of all aspects of food at this complex continues to increase. Attention is paid to loading and transporting of frozen and perishable food to country areas.

With the changes in the form of transport of foods i.e. containerisation there continues to be the added problem of contamination of food in mixed cargo lots and the assessment of damaged food products.

Liquor Inspection

A total of 663 visits were made to licensed premises during the year. Details being as follows :—

	Town	Country
Hotels	153	255
Limited Hotels	12	3
Restaurants	17	20
Licensed Clubs	62	76
Winehouses	14	1
Taverns	12	2
Spirit Merchants	4	....
Cabarets	20	....
Wine Saloons	....	3
Licensed Stores	1	....
Catering Permits	5	....
Function Permits	3	....
Total Inspection	663	

Towns in the Kimberley area were visited during the year and all licensed premises along the East West Highway through to the border of South Australia.

Routine inspection was continued to expose various imported brands of spirits which are below the required spirit strength. In most cases merchants were permitted to re-export these consignments. However, where adulteration was detected, legal proceedings were instigated.

The professional assistance and advice given by the Food and Nutrition Officer, Mr. J. Edinger is again acknowledged.

16. SALMONELLOSIS

Early in 1973, a major food poisoning outbreak occurred in the metropolitan area. Investigation and trace back procedures isolated the source of infection to a small goods manufacturing establishment whose goods were marketed throughout the State.

Samples were taken and the causal organisms identified. The factory was closed and all infected goods destroyed.

A sanitising programme was introduced, and an education programme related to personal hygiene, particularly hand hygiene was introduced to the staff. After two weeks the factory was permitted to resume operations, and no further cases occurred.

In an endeavour to avoid recurrence of similar situations a monitoring programme was initiated in co-operation with the State Health Laboratory Service.

The programme is aimed at measuring the incidence or increase in prevalence of the various organisms which are likely to cause food poisoning.

Several thousand samples are now being taken annually for examination including :-

Humans	Animals (domestic and wild)
Foods	Sewage
Pet Meats	Natural waters
Meat Effluents	Soil
Abattoir Effluents	Drains

17. MEAT INDUSTRY

During the year many different facets emerged within the meat industry, some a projection of already established practices while others showed tendency towards completely new procedures.

In several years, major effort has been directed towards improving the structural aspects of meat works, and while there are some works which still could not be classed as satisfactory, a vastly improved general standard has been achieved. Efforts to bring all works to the required standard is being maintained. During the year two new large works were completed, both of particularly high standard and a further works is being considered for the Northam District.

There are now 67 registered works in the country areas of the State, of which 14 are licensed for the export market.

The sustained effort to improve methods of meat transport which resulted in the promulgation of the Meat Transport regulations has transformed this aspect of environmental health, and generally acceptable standards now apply throughout the State.

A point of interest is that the Western Australian Regulations were taken as a basis to set standards for vehicles engaged in the transport of meat for the export market.

Other matters relating to the meat industry which received attention included :—

(a) An investigation of the " feed lot " concept of cattle raising. With the assistance of overseas experts, guide lines for methods of operation and control were evolved, and methods of disposal of effluent and effluvia established.

(b) In co-operation with other affected Government Departments, examination for suitability was made of proposed sites for skin and wool processing works plans examined, and necessary meetings attended.

(c) Continued liaison with the Department of Agriculture and the Meat Inspection services throughout the State concerning the animal diseases eradication programme, including Tuberculosis and Brucellosis.

During the year the number of specimens of suspected cysticercus bovis rose to 39. Six of these were confirmed by laboratory examination, two could not be identified and the remaining 31 were concluded to be likely C. bovis; although actual remnants could not be identified.

18. FISHING INDUSTRY

The fishing industry in this State has a wide geographical disposition, extending from the wet fish industry in Eucla, to the prawning along the northern coast, it includes the rock lobster industry up to 70 miles off the west coast, the salmon and tuna fishing industry and the estuarine fishing in the Mandurah area.

General surveillance of all facets of the industry was maintained during the year and meetings were held with representatives of the industry to discuss legislation. Early in the year, at the request of the Hon. Minister for Fisheries, a detailed survey was made of the Abrolhos Group of Islands in co-operation with Officers of the Department of Fisheries and Fauna.

The survey showed that 22 of the islands are inhabited, 385 buildings have been erected for habitation and during the five months of the fishing season (March–August) the population was approximately 1 000 people.

The survey revealed serious deficiencies in basic sanitation and hygiene.

Several meetings were convened with the inhabitants of the Islands, and representatives of their association. The need for improved standards of sanitation was explained and methods of improvement evolved.

As a consequence of these meetings, the island residents formed committees of management and improved sanitation has resulted.

Further visits to this area will be made in the forthcoming year.

1973 WATER SAMPLING DETAILS

Routine Samples		
Ocean Samples (Coliform)		988
Lake Samples (Coliforms-Salmonellae)		624
River Samples (Coliform)		1 924
National Parks		468
Miscellaneous		
Park Fountains	114	
Abattoir Effluent	15	
Domestic Water Supplies	22	
Public Swimming Pools	24	
Food Processing Wastes	49	224
Total		4 228

20. VARIOUS OTHER ROUTINE MATTERS CONDUCTED DURING THE YEAR

1. Investigation of statutory appeals and complaints made to the Commissioner of Public Health.
   Sixty eight appeals and 214 complaints were investigated.

2. Examination of food premises proposed as suppliers to Government Hospitals by public tender.

3. Completion of investigations and promulgation of regulations relating to food hygiene, poultry processing and sanitary requirements for high rise buildings under construction.
   Completion of the investigation into Public Toilet facilities in shops and shopping complexes and preparation of first draft of proposed regulations.

4. Regular inspections of Perth Airport on behalf of the Department of Civil Aviation, and all food handling premises under the control of the State Gardens Board, on behalf of the Lands Department.

5. Regular supervisory visits to Country Local Health Authorities.

6. Metrication of Health Act and associated regulations and bylaws.

7. Lectures on aspects of Environmental Health to Health Surveying students, members of the nursing profession and various formal and informal Public groups.

8. Attendance at various formal and ad hoc meetings on behalf of the Commissioner of Public Health.

21. APPRECIATION

My appreciation is again extended to a loyal and dedicated staff who were responsible for the above activities.

Appendix A

MEAT INSPECTION FOR YEAR ENDED 31st DECEMBER, 1973

Types and Numbers of Animals Slaughtered	Carcases Condemned										Part Carcases Condemned						Organs Condemned						
	Tuberculosis	Actinomycosis	Emaciation	Piroplasmosis	Pleuro-Pneumonia	Caseous Lymphadenitis	Para-Typhoid	Traumatic and Septic	Other Abnormalities	Total Carcases Condemned	Actinomycosis	Caseous Lymphadenitis	Tuberculosis	Arthritis	Other Abnormalities	Total Part Carcases Condemned	Actinomycosis	Echinococcus Granulosis	C. Ovis	Hydatids	Tuberculosis	Other Abnormalities	Total Organs Condemned
Midland—																							
Cattle and Calves 43 212	59	2	....	....	....	....	....	121	26	208	243	....	12	....	192	447	240	232	....	....	18	11 954	12 444
Sheep and Lambs 413 355	....	....	....	....	....	14 202	....	3 213	7 421	24 836	....	....	....	....	....	....	1	....	....	....	....	164 958	164 959
Pigs 132 341	1	....	....	....	....	....	3	154	594	752	....	....	3	1 159	1 425	2 587	....	....	....	....	....	21 727	21 727
Robbs Jetty—																							
Cattle and Calves 33 931	4	....	....	1	....	....	....	27	37	69	866	....	1	52	190	1 109	803	161	....	....	....	3 102	4 066
Sheep and Lambs 51 287	....	....	....	....	....	4 286	1	1 004	6 513	11 804	22	5 628	1	4 647	83	10 381	3	234	....	....	....	37 902	38 139
Pigs 37 158	7	17	....	....	....	....	3	74	202	303	....	....	1	471	339	811	....	2	....	....	1	15 388	15 391
Watsons—																							
Pigs 140 754	....	....	....	....	....	....	55	540	2 108	2 703	....	....	....	10 475	6 555	17 030	....	18	....	....	....	62 126	62 144
Country Districts—																							
Cattle and Calves 116 619	24	7	10	....	....	....	....	99	70	210	124	....	7	78	327	536	240	....	2	32	12	1 665	1 951
Sheep and Lambs 727 910	....	....	1 625	....	....	526	1	794	865	3 811	1	998	....	916	281	2 196	1	....	3 049	1 515	....	69 269	73 834
Pigs 96 743	....	....	2	....	....	....	25	94	382	503	....	....	7	357	395	759	....	....	....	146	12	10 455	10 613
Total State—																							
Cattle and Calves 193 762	87	9	10	1	....	....	....	247	133	487	1 233	....	20	130	709	20 92	1 283	393	2	32	30	16 721	18 461
Sheep and Lambs 1 192 552	....	....	1 625	....	....	19 014	2	5 011	14 799	40 451	23	6 626	1	5 563	364	12 577	5	234	3 049	1 515	....	272 129	276 932
Pigs 406 996	8	17	2	....	....	....	86	862	3 286	4 261	....	....	11	12 462	8 714	21 187	....	20	....	146	13	109 696	109 875

Note : Country Abattoirs included—
Albany*, Boulder, Boyup Brook, Bunbury, Busselton, Dardanup/Capel, Esperance, Greenough, Harvey, Katanning†, Kojonup, Manjimup, Merredin, Moora, Narrogin, Northam Plantagenet, Wagin, Waroona, Woodanilling.
* Only stock slaughtered, no condemnation figures received.
†Six months figures only.

Appendix B

METROPOLITAN FLY CONTROL PLANNING COMMITTEE—MAY 1974

Report on Fly Control Officers Employed and Premises Inspected (Metropolitan Area) During Both Phases of 1973/74 *Campaign*

Local Authorities Participating	15
Students Employed	7
Mature Age Persons Employed	34
Premises Visited	76 750
Premises Inspected	69 787
Premises Breeding Flies	4 154
Percentage of Premises Not Inspected	10·0%

Breeding Sites

	%
Rubbish Bins	29·7
Buried Food Wastes	4·7
Poultry Keeping	1·9
Incinerators	1·4
Mulch	3·9
Compost Heaps	11·0
Blood and Bone	0·3
Animal Manure	2·8
Poultry Manure	4·4
Lawn Clippings	39·7
Other	0·2

Comparative Figures of Breeding

	%		%
1961/62	22·3	1967/68	6·7
1962/63	23·5	1968/69	9·0
1963/64	10·0	1969/70	8·1
1964/65	10·0	1970/71	7·9
1965/66	9·4	1971/72	6·7
1966/67	7·9	1972/73	5·0
		1973/74	6·0

Comparison : Geraldton 1973/74—8·7%.

43996—(12)

METROPOLITAN FLY CAMPAIGN 1973–74 (BOTH PHASES) SUMMARY OF RESULTS (FULL REPORT)

Local Authority	No. of Persons Employed.	Total Time of Employment (in weeks).	Number of Premises Visited.	Number of Premises Inspected.	Number of Premises where Breeding Detected.	Number of Breeding Places Found.	Rubbish Bins.	Buried Food Wastes.	Poultry Keeping.	Incinerators.	Mulch.	Compost Heaps.	Blood and Bone.	Animal Manure.	Poultry Manure.	Lawn Clippings.	Other.
City of Perth	12	276	20 730	19 701	1 695	1 900	580	115	19	32	40	210	7	76	128	693	....
City of Stirling	4	24	4 095	2 652	169	169	36	23	24	3	5	15	1	13	14	35	....
City of South Perth	2	18	2 563	2 552	26	26	4	5	4	....	....	....	....	1	....	12	....
City of Fremantle	2	17	2 357	1 554	15	15	7	2	....	....	....	3	....	....	....	3	....
City of Melville	3	66	14 961	14 812	393	401	32	15	13	3	43	64	1	7	3	220	....
City of Subiaco	1	20	4 254	4 066	104	104	31	6	....	....	3	20	2	1	3	29	9
City of Nedlands	2	32	6 080	6 080	212	212	39	10	2	9	5	56	....	5	5	80	1
Town of Canning	2	16	1 960	1 033	42	42	8	4	12	....	....	2	....	....	....	16	....
Town of Claremont	1	10	2 057	1 168	204	206	87	6	9	3	2	25	3	2	13	56	....
Town of Mosmans	1	6	1 418	1 348	24	24	6	....	....	....	....	6	....	....	....	12	....
Shire of Bassendean	2	11	3 050	3 038	488	488	19	7	2	2	61	39	....	2	5	351	....
Shire of Belmont	2	3	748	363	145	145	52	5	....	....	....	2	....	....	....	86	....
Shire of Kalamunda	3	9	3 196	3 086	282	282	231	1	....	2	....	17	....	10	6	15	....
Shire of Rockingham	2	26	5 228	4 976	322	322	150	6	....	6	8	23	....	3	7	119	....
Shire of Wanneroo	2	30	4 053	3 358	33	33	17	....	....	....	....	1	....	4	7	4	....
	41	564	76 750	69 787	4 154	4 369	1 299	205	85	60	167	483	14	124	191	1 731	10
Town of Geraldton	2	12	4 002	3 308	287	287	98	7	6	33	2	13	1	14	6	95	12

STATISTICAL SUMMARY OF ANNUAL FLY CAMPAIGN 1973/74

Year	Number of Local Authorities		No. of Vacancies	No. of persons trained	No. of Courses	No. available	No. employed	Previously Trained persons applied	Previously Trained persons employed	Total No. of weeks	No. of Premises visited	No. of Premises inspected	No. of Premises breeding flies	Percentage of Premises inspected breeding flies	No. of Breeding places found
	Metropolitan	Country													
1969/70	14	1	41	37	4	37	36	18	18	327	52,688	40.643	3,303	8·1	3,481
1970/71	16	1	35	33	3	33	33	5	5	343	61,080	51,121	4,050	7·9	4,539
1971/72	16	—	35	31	4	25	25	13	13	440	75,895	66,487	4,477	6·7	4,737
1972/73	16	—	42	23	2	23	23	19	19	564	86,051	75,133	3,728	5·0	4,066
1973/74	15	1	41	24	4	24	24	24	24	564	76 750	69 787	4 154	6·0	4 369

FLY CAMPAIGN 1973/74—COMPARISON WITH 1972/73—BOTH PHASES

	No. of Premises Inspected		No. of Premises Breeding Flies		Percentage of Premises Breeding Flies	
	1972/73	1973/74	1972/73	1973/74	1972/73	1973/74
City of Perth	14 077	19 701	1 234	1 695	8·8	8·6
City of Sterling	5 052	2 652	338	169	6·7	6·4
City of South Perth	4 124	2 552	78	26	1·9	1·0
City of Fremantle	4 863	1 554	380	15	7·8	1·0
City of Melville	14 575	14 812	282	393	1·9	2·7
City of Subiaco	4 045	4 066	43	104	1·1	2·6
City of Nedlands	6 119	6 080	221	212	3·6	3·5
Town of Canning	2 287	1 033	83	42	3·6	4·0
Town of Cockburn	1 316	1 168	95	204	7·2	17·5
Town of Claremont	1 060	....	108	....	10·2	....
Town of Mosmans	1 434	1 348	32	24	2·2	1·8
Shire of Bassendean	2 704	3 038	108	488	4·0	16·0
Shire of Belmont	4 404	363	208	145	4·7	40·0
Shire of Kalamunda	3 161	3 086	269	282	8·5	9·1
Shire of Rockingham	4 070	4 976	213	322	5·2	6·5
Shire of Wanneroo	1 842	3 358	36	33	2·0	1·0

METROPOLITAN FLY CAMPAIGN 1973–74

Persons Trained at Four Schools

Mature Aged Persons	17
Students	7
	24

Metropolitan

15 Local Authorities employed a total of 34 mature age persons and 7 students as "Fly Control Officers".

Country

Geraldton Town Council employed two women.

Previously Trained Persons Who Re-applied and were Employed

Mature Age Persons	24
Students	Nil

Cockburn Council—Did not participate due to staffing problems.

8 Local Authorities participated in the Autumn Campaign.

Appendix XV

Food & Nutrition Branch

J. R. Edinger B.Sc. A.R.A.C.I. Food & Nutrition Officer

1. General

The number of samples taken by the food Section of the Inspection Branch has doubled compared to the previous year. This has been brought about by such factors as special sampling programmes, an outbreak of foodpoisoning and a wider variety of sampling.

The Food and Nutrition Officer is responsible for amending and drafting the Food and Drug Regulations with the main emphasis on foods, but over the past year there has been an increased involvement in the drugs and therapeutics side with an appointment to the National Therapeutics Goods Committee, which meets regularly in Canberra. The Committees' aim is to draw up a uniform therapeutics goods standard which can be adopted by each State.

The Food and Nutrition Branch has maintained good contact with the public, local industry, local government and other government departments, supplying information and acting in an advisory capacity where required.

2. Sampling Programmes

All the samples collected or submitted for investigation were examined by three laboratories, namely, the Government Chemical Laboratories, and the State Public Health Microbiological and Biochemical Laboratories. A summary of the types of samples submitted, together with the number of each is given in tables A, B and C.

2.1 **Cockburn Sound Survey**—Mercury content of fish.

Sampling was not conducted on as large and as comprehensive scale as in the previous year. Nevertheless, thirtynine samples were examined for mercury and were found to be comparable with those of the previous year, being below the level of 0·5 ppm of mercury.

2.2 **Fish**—(Canned, Frozen Imports, Crustaceans, Molluscs)

A total of 340 samples of fish including canned, frozen and fresh fish were examined throughout the year for such items as heavy metals, freshness (total volatile bases and microbiological examination), dyestuffs and where applicable for conformity of package labelling to our Food and Drug Regulations.

2.3 **Shark**—sampling

A planned sampling programme was entered into with the Fisheries Department. Samples were collected off the Southern, South West and Western portions of the W.A. sea-coast. Sampling is still continuing.

Such a large area of coastal water presents problems in as much as the many different species of sharks encountered, the different feeding grounds provided and the different feeding habits of the sharks themselves make an assessment of the whole situation virtually impossible until much more information is obtained by sampling, accurate identification and more research into the subject.

2.4 Monitoring of Imported Foods from Fremantle Wharf

Many hundreds of samples of frozen fish were examined, including 72 samples of prawns, for freshness, mercury content in some cases and labelling conformity to Food and Drug Regulations where packaged products were submitted.

2.5 **Crayfish Survey**—Westralian Coast for Mercury Content

Sampling was not conducted on as large a scale as in the previous year. All 38 samples of flesh from the crayfish tails submitted by the Fisheries Department were below the maximum allowable limit of 0·5 parts per million of mercury.

2.6 **Margarine**—Cooking

Six different brands of cooking margarine were examined and all were in conformity with the relevant Act and Regulations.

2.7 Liquor Inspection

Officers of the Food Section continued inspection of the liquor supplied on licensed premises throughout the State, taking 54 samples for analyses and action as required.

2.8 Polychlorinated Biphenyls (P.C.B.'s)

Samples of cheese, eggs, plastic bags and crayfish tails totalling 38 samples were examined. All samples were found to be below 0·05 ppm and to be quite acceptable for human consumption.

2.9 Special Projects

2.9.1 **Cooked Fish**—Mercury content

Eight samples were purchased from various suburban fish shops and examined for mercury content. All were under the prescribed maximum limit of 0·5 ppm (0·04–0·40).

2.9.2 Whisky—Scotch

Twenty-five samples were examined by gas-liquid chromatography for identifying characteristics, in a research project.

2.9.3 Eggs

(*a*) *Mercury*

Three lots each of six eggs from three farmers, together with the poultry feed on which the hens were fed, were supplied by the W.A. Egg Marketing Board. Yolks and whites were examined separately. All samples of eggs were within the prescribed limit for mercury.

(*b*) "*Polyunsaturated*" *Eggs*

The fat content of eggs claimed to be polyunsaturated was examined in eggs obtained from three States.

(*c*) *P.C.B.'s*

Five eggs were examined for polychlorinated biphenyls but P.C.B.'s were not detected.

2.9.4 **Fish**

(a) Six samples of imported fish soup were examined for mercury and all were found to be satisfactory.

(b) Six crayfish tails were examined for pesticide residues with negative result.

2.9.5 **Crockery Ware**—For leachable lead
Some 105 samples were examined for lead content of the glazing material.

3. Food Regulations

Two new regulations, namely "Foods not elsewhere standardised" (Reg. A.12) and "Food Additives" (Reg. A.13) were gazetted on 27th April 1973 G.G. (No. 31).

Seven amendments were gazetted on the same date, namely, "Preservatives" (Reg. A.02); "Modifying Agents" (Reg. A11); "Fish" (Reg. D.01); "Chocolate" (Reg. K.04); "Spices, Mixed Spices and Condiments" (Reg. L.01); "Vinegar" (Reg. L.03); and "Brewed Soft Drinks" (Reg. P.13).

Table A

GOVERNMENT CHEMICAL LABORATORIES

Food—	No. of Samples
Aerated waters	30
Apples	1
Asparagus	1
Bacon	2
Baked beans	1
Beans	3
Beer	2
Berverage	11
Bread	3
Butter	1
Cake	2
Cauliflower	9
Cheese	9
Coke' drink	1
Confectionery	2
Cooking Oil	1
Corned beef	2
Crayfish	32
Crayfish tails	6
Curing salt	1
Drink—mix	5
Eggs	7
Endives	1
Fat	10
Fish	328
Food (misc.—cooked)	1
Food additive	2
Forcign food matter	1
Fruit	1
Fruit juices	9
Grapefruit	3
Gravy mix	2
Jelly	1
Lentils	14
Liquor	54
Margarine	6
Meat	37
Meat additive	2
Milk	50
Milk (human)	1
Milk (powder)	2
Mussels	4
Oats	2
Orange Concentrate	1
Oysters	11
Oyster meat	1
Peanuts	10
Peanut Oil	1
Peas (canned)	6
Pet food	4
Pimentos	1
Potatoes	16
Potato chips	1
Prawns	72
Preservative	1
Rice bubbles	1
Salmon (Canned)	1
Salt	2
Savouries	1
Shark	587
Soya bean oil	1
Sweets	1
Tea	3
Tomatoes	5
Tomato juice	1
Tomato sauce	9
Tripe	12
Total	1 412

Miscellaneous Samples connected with Food Investigations—

Sample	No. of Samples
Blood	1
Bottles	7
Ceramic Glaze	2
Chemicals	2
Cloth	1
Cloth books	4
Cooking utensils	2
Crockery	105
Dog food	2
Drugs	1
Effluent	1
Emulsion	1
" Hippie " necklace	1
Hydrometer	1
Lupin seeds (white)	12
Ozoniser	1
Packing	1
Paper label	1
Pewter jug	1
Sanitary liquid	2
Toys	45
Water	8
Wood	1
Wrapper (bag)	2
Total	205

Table B

PUBLIC HEALTH LABORATORIES (BIOCHEMISTRY DEPARTMENT)

Methyl and Total Mercury Estimations	No. of Samples
Flounder (imported)	1
Kingfish	11
Shark	99
Total	111
Pesticides—	
Cheese	24
Eggs	5
Total	29
Polychlorinated Biphenyls (P.C.B.'s)	
Cheese	24
Eggs	5
Plastic (bags)	3
Crayfish	6
Total	38
Food Contamination—	
Meat	3
Total	3
Liquor (Special Project) —	
Whisky	25
Total	25
Grand Total	206

Table C

PUBLIC HEALTH MICROBIOLOGICAL LABORATORY

Food—	No. of Samples
Canned tomatoes	2
Cereals	1
Chocolate	2
Cooking Oils	2
Cream coconuts	1
Eggs	4
Fish	83
Flavourings	1
Frogs legs	5
Fruit	1
Gherkin	1
Meat and Meat products	262
Milk and Milk products	83
Mushrooms	2
Pizza	1
Poultry	10
Powders (various)	9
Salad dressing	3
Salt	3
Savouries	3
Shell fish	289
Stew	1
Spices	3
Spring roll	1
Supa spread	6
Sugar	1
Vegetables	6
Vinegar	1
Total	787

Appendix XVI

Statistics Branch

Marlene M. Lugg, M.T. Sc.D., M.P.H., F.H.A., F.A.P.H.A., F.R.S.H.
Health Statistician-in-Charge

During 1973, the Statistics Branch gained National and International recognition in its work towards offering a comprehensive co-ordinated Health Statistics Service for Western Australia.

HOSPITAL MORBIDITY STATISTICS

Co-operation from public and private hospitals and doctors remains excellent, and requests for information from the system are increasing beyond all expectations.

The statistical analysis of discharges from W.A. Hospitals was the major project completed this year, and will be presented to the State Health Council early in 1974, along with the Report of Metropolitan Hospital needs. The 17 statistical appendices of this report are truly a far-reaching base-line document, on which further health planning can be based.

During May, the Health Statistician presented a preliminary paper dealing with the methodology of the above mentioned report, at the Pacific Regional Meeting of the International Epidemiological Association in Sydney. The paper was extremely well received by delegates, guests and visitors from around the world.

During 1973, total hospital discharges increased 3·5 per cent from 1972 (229 593 to 237 634). Operations increased 2·4 per cent, hospitalization for accidental injuries increased 4·9 per cent, and the remaining non-surgical, non-accident discharges increased only 3·3 per cent. In all the above, increases were markedly less than for the corresponding period 1971–72. Discharge rates per 1 000 population also increased only slightly

HOSPITAL DISCHARGE RATES W.A. 1971–73

Rate per 1 000 Population

Year	Perth	Rural	Total State
1971	169	278	209
1972	180	300	217
1973	182	308	221

There has been almost no variation in hospitalization patterns by disease, sex or age groups, compared with 1971 and 1972.

As in previous years, the teaching hospitals have the longest average stay (9·6 days) the private hospitals the shortest (7·0 days) and other government and board hospitals in-between with 7·7 days. Over the past 3 years there has been an overall drop in mean length of stay for all types of hospitals.

MEAN LENGTH OF STAY BY TYPE OF HOSPITAL W.A. 1971–73

Mean Length of Stay (days)

Year	Teaching	Govt & Board	Private	All hospitals
1971....	10·6	8·1	7·4	8·7
1972....	10·1	7·9	7·0	8·3
1973....	9·6	7·7	7·0	8·1

The overall slight decrease in length of stay is reflected in most conditions treated, except for the following, in which lenght of stay increased slightly: infective and parasitic diseases, conditions of the genito urinary system, treatment of congenital anomalies and symptoms and ill–defined conditions.

The overall distribution of patients by type of hospital remains almost identical to previous years.

DISTRIBUTION OF DISCHARGES BY TYPE OF HOSPITAL W.A. 1971–73

Type of Hospital

Year	Teaching %	Govt & Board %	Private %
1971	29·5	47·7	20·4
1972	29·2	47·4	23·4
1973	29·9	46·9	23·2

Operation cases showed a slightly decreased average length of stay; 7·5 days compared with 7·7 days in 1972.

Accidents, poisoning and violence continues to account for 13·5 per cent of all discharges, and 13·9 per cent of total bed days, with 10 deaths per 1 000 separations an increase of 2 over the 1972 rate. As in the years 1971 and 1972, accidental injury remains the leading reason for hospital admissions in the male, aged 10–50. Further analysis of accident data is planned for next year.

DATA PREPARATION UNIT

This unit continues to process charges and billing lists for Public Health Laboratory tests. The installation of dedicated computers in the laboratory has resulted in a most welcome decrease in data to be processed from that source as there has been a great increase in data processing for medical record linkage and *ad hoc* projects within the health services, as well as perinatal death notifications, Cancer Register and notifiable diseases.

CANCER REGISTER

The Cancer Register is now progressing well as a result of overtime worked by two of the clerical staff. Hopefully, funds will be available next year to commence programming, so that routine statistical work can be carried out on the computer by the

end of 1974. The Health Statistician attended a national working party on Cancer Registration, in Canberra in December, at which it was noted that only two population-based Cancer Registries exist in Australia, and of these, only Western Australia's was run as a " by product " of the hospital morbidity survey, thus reducing costs.

The W.A. Central Cancer Register is a State-wide, population based epidemiological register covering the following: (1) all in-patients in all hospitals (2) radiotherapy clinics (3) Registrar General death notifications and (4) Pathologists. The latter (pathologists) section is not as yet developed as fully as possible. Types of Cancer recorded include all malignancies except skin (but does include melanoma).

The majority of data collected is demographic, (age, sex, occupation, place of birth, etc.) plus condition for which treated, other conditions present, operations performed, primary treatment, histology, etc. Further hospital and radiotherapy visits are monitored. It is intended that out-patient visits and routine follow-up of all patients at some interval (such as 3 or 5 years) will be added in the near future when staff and finance become available.

Computer analysis, frequencies, cross tabulations are now available for individual hospitals, and will be available for the total Central Cancer Register by the end of 1974, when some of the more complicated up-dating and linkage programmes now being written are completed. The procedures employed plus Bureau of Census, routine census data allows calculation of rates for a variety of demographic variables for the total State or sub-divisions thereof, down to the smallest census collectors district.

Analysis of treatment or detailed analysis of any type or sub-class of disease can be undertaken by special groups. For example, the Leukemia and Allied Disorders group has been obtaining detail only possible through direct interview. The newer Bone Tumour Registry has a pro-forma of 12 pages of data obtained from doctors and hospitals records; copies of x-rays, pathology slides, and medical photographs.

Thus the function of the Central Cancer Registry is a routine epidemiological monitoring system, which can be expanded in depth whenever suitable projects, staff and finance are available. (Costs involved are considerable, and tend to be under-estimated). For these special interest sub-groups, the Central Cancer Register serves as a " patient locator ", furnishing all data available to the sub-group; and then assisting with research design, forms development, statistical assistance, and computer processing if needed.

NOTIFIABLE DISEASES

The notifiable diseases and venereal disease notifications are now routinely processed in the Statistics Branch, which also co-operated with the Special Clinic Staff to re-design notification forms in order to simplify doctors' reporting and statistics branch processing. The new forms include tear-off, pre-paid, self-sealing envelopes and are designed for a minimum of manual coding.

OCCUPATIONAL HEALTH

The Statistics Branch has become closely involved with routine and *ad hoc* surveys carried out by the Occupational Health Branch. Survey design, sample selection, questionnaires, and analysis of results for railways and mining industry were carried out during the year. This portion of our work is now increasing rapidly and promises to become more involved and important in the near future.

AD HOC PROJECTS AND SURVEYS

Social and Preventive Medicine Projects

Medical Students were again employed during the summer holidays for special Public Health projects. Students assisted in the tabulation and analysis of the demography of Human Parasitology, and in the registration of Cancer.

The Statistics Branch continues to offer practical training and experience for fifth year medical students as part of their Social and Preventive Medicine Course.

Others

Officers of the Statistics Branch continue to assist with Swan River Board Water Analysis Statistics, meat inspection, community health services and medical manpower statistics.

OTHER ITEMS OF INTEREST

During 1973 the Health Statistician tutored fifth year medical students in epidemiology, lectured on survey methods to W.A.I.T. students and spoke to other interested groups.

Numerous requests for information were received from Government, University and private sources. The Health Statistician continues to serve on the State Health Council's Computer Co-ordinating Committee, and the Hospital Requirements Special Sub-Committee on Metropolitan Hospital Needs. She is a member of the N.H. & M.R.C.'s Medical Statistics Committee, the Cancer Registries Working Party, and assisted the National Hospitals and Health Services Interim Committee with their 1973 National Survey of Hospitals, which was carried out in Western Australia by the Statistics Branch.

In closing, I would again like to express my appreciation to the Statistics Branch Staff for a year's work well done. The Report on Metropolitan Hospital Needs taxed the staff considerably; but they produced tables, maps and other data with speed and efficiency, often in the face of seemingly impossible deadlines.

This Annual Report marks an important milestone for us all, as it is the last submitted to Dr. William Sharp Davidson, before his retirement from the post of Commissioner of Public Health. The Statistics Branch is especially indebted to him for the foresight and guidance he has given to the branch as a whole and to me personally. Dr. Davidson realized that although one can (and often must) make decisions without statistics, management is better with quantitative information. His hospital planning reports led the field in W.A., and he organized hospital morbidity statistics reporting from the W.A. teaching hospitals in this State, years before the N.H. & M.R.C.'s 1966 recommendations along that line.

It is hoped that the Statistics Branch will continue to serve Western Australia in the manner in which Dr. Davidson envisaged. The staff of that Branch now joins me in expressing our thanks for his help over the past six years, and wishes him a long and enjoyable retirement.

Appendix XVII

DISCHARGE FROM W. A. HOSPITALS 1973

SUMMARY BY AGE GROUPS AND LENGTH OF STAY (DAYS)

Description	AGE GROUPS					
	0–4	5–14	15–44	45–64	65 and over*	Total
All Discharges—						
Number	29 831	25 256	110 075	41 961	30 511	237 634
Percentage of Total	12·6	10·6	46·3	17·7	12·8	100·0
Length of Stay	180 391	107 878	683 689	426 892	529 442	1 928 292
Percentage of Total	9·4	5·6	35·5	22·1	27·5	100·0
Average Length of Stay	6·0	4·3	6·2	10·2	17·4	8·1
Operation Cases Only—						
Number	5 863	12 609	57 524	21 013	11 083	108 092
Percentage of Total	5·4	11·7	53·2	19·4	10·3	100·0
Lenght of Stay	25 033	50 519	357 141	207 531	175 869	816 093
Percentage of Total	3·1	6·2	43·8	25·4	21·6	100·0
Average Length of Stay	4·3	4·0	6·2	9·9	15·9	7·5
External Cause (Injury)—						
Number	3 540	4 847	15 916	4 816	3 157	32 276
Percentage of Total	11·0	15·0	49·3	14·9	9·8	100·0
Length of Stay	15 960	22 718	107 046	54 780	66 180	266 684
Percentage of Total	6·0	8·5	40·1	20·5	24·8	100·0
Average Length of Stay	4·5	4·7	6·7	11·4	21·0	8·3

*Includes ages not stated

AGE SPECIFIC HOSPITAL DISCHARGES.

WESTERN AUSTRALIA 1968–1973.*

Year	AGE GROUPS							
	Under 15		15–64		65+		Total	
	No. of Discharges	Percentage of Total	No. of Discharges	Percentage of Total	No. of Discharges	Percentage of Total	No. of Discharges	Percentage of Total
1968	34 215	27·57	72 379	58·33	17 495	14·10	124 089	100
1969	39 926	27·65	83 262	57·66	21 212	14·69	144 400	100
1970	41 404	27·69	86 420	57·79	21 725	14·53	149 549	100
1971	49 399	23·37	135 516	64·12	26 434	12·51	211 394	100
1972	54 184	23·60	146 507	63·81	28 902	12·59	229 593	100
1973	55 087	23·18	152 036	63·98	30 511	12·84	237 634	100

*Private Hospitals not included prior to 1971

W.A. HOSPITALS

Patients Discharged During 1973

I.C.D. Categories	Disease Groups	Number of Cases		Number Days in Hospital		Average Number Days in Hospital		Per cent of Total Bed Days		Outcome			
		Male	Female	Male	Female	Male	Female	Male	Female	Discharged	Trans-ferred	Died	Deaths Per 1,000 Separations
Sec. I													
000–009	Intestinal Infectious Diseases	2 730	2 790	20 183	20 100	7·3	7·2	1·05	1·04	5 384	108	28	5
010–019	Tuberculosis	160	81	9 824	2 559	61·4	31·6	0·51	0·13	217	20	4	16
020–027	Zoonotic Bacterial Diseases	3	....	37	....	12·3	....	0·00	....	3	....	....	....
030–039	Other Bacterial Diseases	147	141	5 257	3 373	35·8	23·9	0·27	0·17	259	9	20	69
040–046	Poliomyelitis and Other Enterovirus Diseases of Central Nervous System	86	67	757	555	8·8	8·3	0·04	0·03	150	3	....	....
050–057	Viral Diseases accompanied by Exanthem	670	642	4 317	4 156	6·4	6·5	0·22	0·22	1 294	17	1	1
060–068	Arthropod-borne Viral Diseases	16	16	234	155	1·4	9·7	0·01	0·01	29	3	....	....
070–079	Other Viral Diseases	1 152	1 305	5 267	6 144	4·6	4·7	0·27	0·32	2 437	17	3	1
080–089	Rickettsioses and Other Arthropod-borne Diseases	23	6	100	24	4·3	4·0	0·01	0·00	29	....	....	....
090–099	Syphilis and Other Venereal Diseases	109	214	443	938	4·1	4·4	0·02	0·05	321	1	1	3
100–104	Other Spirochaetal Diseases	8	5	62	19	7·8	3·8	0·00	0·00	13	....	....	....
110–117	Mycoses	94	80	961	793	10·2	9·9	0·05	0·04	166	6	2	11
120–129	Helminthiases	23	30	258	319	11·2	10·5	0·01	0·02	53	....	....	....
130–136	Other Infective and Parasitic Diseases	95	77	947	772	10·0	10·0	0·05	0·04	169	3	....	....
Sec. II													
140–149	Malignant Neoplasm of Buccal Cavity and Pharynx	134	43	1 699	467	12·7	10·9	0·09	0·02	151	11	15	84
150–159	Malignant Neoplasm of Digestive Organs and Peritoneum	464	354	10 439	9 294	22·5	26·3	0·54	0·48	591	36	191	233
160–163	Malignant Neoplasm of Respiratory System	601	89	11 007	1 557	18·3	17·5	0·57	0·08	456	34	200	289
170–174	Malignant Neoplasm of Bone, Connective Tissue, Skin and Breast	797	797	6 800	10 719	8·5	13·4	0·35	0·56	1 521	21	52	32
180–189	Malignant Neoplasm of Genito-Urinary Organs	657	496	7 559	7 192	11·5	14·5	0·39	0·37	1 026	30	77	67
190–199	Malignant Neoplasm of Other and Unspecified Sites	458	540	8 607	12 776	18·8	23·7	0·45	0·66	630	74	294	294
200–209	Neoplasms of Lymphatic and Haematopoietic Tissue	356	306	4 204	3 763	11·8	12·3	0·22	0·20	541	17	104	157
210–218	Benign Neoplasms	488	1 571	2 771	9 576	5·7	6·1	0·14	0·50	2 032	22	5	2
230–239	Neoplasms of Unspecified Nature	158	184	1 403	1 449	8·9	7·9	0·07	0·08	305	24	13	38
Sec. III													
240–246	Diseases of Thyroid Gland	66	326	701	3 512	10·6	10·8	0·04	0·18	378	11	3	7
250–258	Diseases of Other Endocrine Glands	630	792	8 581	12 445	13·6	15·7	0·45	0·65	1 313	60	49	34
260–269	Avitaminoses and Other Nutritional Deficiency	309	322	3 841	4 519	12·4	14·0	0·20	0·23	591	31	9	14
270–279	Other Metabolic Diseases	195	299	2 564	3 821	13·1	12·8	0·13	0·20	484	6	4	8
Sec. IV													
280–289	Diseases of Blood and Blood Forming Organs	611	612	4 502	6 574	7·4	10·7	0·23	0·34	1 167	32	24	19

Sec. V												
290–299	Psyehoses	444	504	8 021	9 770	18·1	19·4	0·42	0·51	801	140	7	7
300–309	Neuroses, Personality Disorders and Other Non-Psychotic Mental Disorders	1 732	2 176	20 559	25 967	11·9	11·9	1·07	1·35	3 701	197	10	2
310–315	Mental Retardation	21	14	213	199	10·1	14·2	0·01	0·01	32	3	....	....
Sec. VI													
320–324	Inflammatory Diseases of the Central Nervous System	109	63	1 304	1 191	12·0	18·9	0·07	0·06	142	20	10	58
330–333	Hereditary and Familial Diseases of Nervous System	25	22	2 00	244	8·0	11·1	0·01	0·01	44	1	2	42
340–349	Other Diseases of Central Nervous System	887	943	11 03 2	13 573	12·4	14·4	0·57	0·70	1 697	107	26	14
350–358	Diseases of Nerves and Peripheral Ganglia	446	665	4 214	4 881	9·4	7·3	0·22	0·25	1 078	33	....	....
360–369	Inflammatory Diseases of the Eye	542	441	3 860	2 663	7·1	6·0	0·20	0·14	971	10	1	1
370–379	Other Diseases and Conditions of the Eye	1 767	1 589	12 735	11 082	7·2	7·0	0·66	0·57	3 325	29	2	1
380–389	Diseases of the Ear and Mastoid Process	1 798	1 607	8 497	8 436	4·7	5·2	0·44	0·44	3 368	36	1	....
Sec. VII													
390–392	Active Rheumatic Fever	110	91	1 718	1 397	15·6	15·4	0·09	0·07	188	12	1	4
393–398	Chronic Rheumatic Heart Disease	75	100	946	1 001	12·6	10·0	0·05	0·05	154	9	12	68
400–404	Hypertensive Disease	576	830	8 208	10 257	14·3	12·4	0·43	0·53	1 333	43	30	21
410–414	Ischaemie Heart Disease	2 333	1 325	31 767	17 777	13·6	13·4	1·65	0·92	3 106	111	441	120
420–429	Other Forms of Heart Disease	1 599	1 145	25 074	20 130	15·7	17·6	1·30	1·04	2 345	113	286	104
430–438	Cerebrovascular Disease	1 092	973	25 366	26 748	23·2	27·5	1·32	1·39	1 437	231	397	192
440–448	Diseases of Arteries, Arterioles and Capillaries	522	253	11 073	5 665	21·2	22·4	0·57	0·29	619	64	92	118
450–458	Other Diseases of Circulatory System	1 604	2 386	17 075	25 360	10·6	10·6	0·89	1·32	3 903	51	36	9
Sec. VIII													
460–466	Acute Respiratory Infection (except Influenza)	3 641	2 880	17 389	13 717	4·8	4·8	0·90	0·71	6 449	60	12	1
470–474	Influenza	902	1 280	4 987	7 651	5·5	6·0	0·26	0·40	2 150	22	10	4
480–486	Pneumonia	2 281	1 758	24 045	15 939	10·5	9·1	1·25	0·83	3 710	112	217	53
490–493	Bronchitis, Emphysema and Asthma	4 265	3 075	39 285	21 082	9·2	6·9	2·04	1·09	7 166	108	66	8
500–508	Other Diseases of Upper Respiratory Tract	4 054	3 717	13 082	12 829	3·2	3·5	0·68	0·67	7 752	18	1	....
510–519	Other Diseases of Respiratory System	1 922	1 439	16 727	11 664	8·7	8·1	0·87	0·60	3 226	81	54	16
Sec. IX													
520–529	Diseases of Oral Cavity, Salivary Glands and Jaws	1 992	2 841	4 361	5 772	2·2	2·0	0·23	0·30	4 821	11	1	....
530–537	Diseases of Oesophagus, Stomach and Duodenum	1 743	972	19 150	8 833	11·0	9·1	0·99	0·46	2 606	76	33	12
540–543	Appendicitis	1 974	2 483	12 592	16 307	6·4	6·6	0·65	0·85	4 377	75	5	1
550–553	Hernia of Abdominal Cavity	2 294	713	18 979	6 456	8·3	9·1	0·98	0·33	2 969	30	8	2
560–569	Other Diseases of Intestine and Peritoneum	1 265	1 333	11 664	15 260	9·2	11·4	0·60	0·79	2 470	74	54	20
570–577	Diseases of Liver, Gall Bladder and Pancreas	1 173	2 408	14 348	29 508	12·2	12·3	0·74	1·53	3 432	85	64	17
Sec. X													
580–584	Nephritis and Nephrosis	216	176	2 570	2 268	11·9	12·9	0·13	0·12	340	22	30	76
590–599	Other Diseases of Urinary System	2 962	3 020	13 534	17 842	4·6	5·9	0·70	0·93	5 867	75	40	6
600–607	Diseases of Male Genital Organs	2 340	....	19 188	....	8·2	....	1·00	....	2 291	35	14	5
610–616	Diseases of Breast, Ovary, Fallopian Tube and Parametrium	87	3 810	400	24 140	4·6	6·3	0·02	1·25	3 871	25	1	....
620–629	Diseases of Uterus and Other Female Genital Organs	....	8 874	....	50 689	....	5·7	....	2·63	8 823	48	3	....

W.A. HOSPITALS—*continued*

Patients Discharged During 1973—continued

I.C.D. Categories	Disease Groups	Number of Cases		Number Days in Hospital		Average Number Days in Hospital		Per cent of Total Bed Days		Outcome			
		Male	Female	Male	Female	Male	Female	Male	Female	Discharged	Transferred	Died	Deaths Per 1,000 Separation
Sec. XI													
630–634	Complications of Pregnancy	....	3 504	....	13 539	....	3·9	....	0·70	3 359	145	....	....
635–639	Urinary Infections and Toxaemias of Pregnancy and Puerperium	....	1 160	....	6 308	....	5·4	....	0·33	1 095	64	1	1
640–645	Abortion	....	3 246	....	10 105	....	3·1	....	0·52	3 229	13	1	....
650–662	Delivery	....	20 464	....	180 751	....	8·8	....	9·37	20 311	150	3	....
670–678	Complications of the Puerperium	....	245	....	927	....	3·8	....	0·05	237	8	....	....
Sec. XII													
680–686	Infections of Skin and Subcutaneous Tissue	1 758	1 096	12 568	7 658	7·1	7·0	0·65	0·40	2 824	28	2	1
690–698	Other Inflammatory Conditions of Skin and Subcutaneous Tissue	353	332	3 631	2 804	10·3	8·4	0·19	0·15	699	12	4	5
700–709	Other Diseases of Skin and Subcutaneous Tissue	1 581	1 518	10 307	9 867	6·5	6·5	0·53	0·51	3 065	33	1	....
Sec. XIII													
710–718	Arthritis and Rheumatism except Rheumatic Fever	978	1 249	17 361	25 281	17·8	20·2	0·90	1·31	2 156	64	7	3
720–729	Osteomyelitis and Other Diseases of Bone and Joint	2 921	2 168	27 993	21 520	9·6	9·9	1·45	1·12	4 967	117	5	1
730–738	Other Diseases of Musculoskeletal System	776	1 120	5 612	9 372	7·2	8·4	0·29	0·49	1 880	14	2	1
Sec. XIV													
740–759	Congenital Anomalies	1 113	830	12 490	6 974	11·2	8·4	0·65	0·35	1 833	57	53	27
Sec. XV													
760–779	Certain Causes of Perinatal Morbidity and Mortality	351	306	4 613	5 295	13·1	17·3	0·24	0·27	598	35	24	36
Sec. XVI													
780–789	Symptoms Referable to Systems or Organs	7 279	7 249	38 720	37 014	5·3	5·1	2·01	1·92	13 975	442	111	7
790–796	Ill Defined Diseases	1 064	1 994	16 103	37 201	15·1	18·7	0·84	1·93	2 791	157	110	35
Sec. XVII													
800–809	Fracture of Skull, Spine and Trunk	1 678	663	19 820	9 261	11·8	14·0	1·03	0·48	2 144	135	62	26
810–819	Fracture of Upper Limb	1 862	1 368	8 038	6 494	4·3	4·7	0·42	0·34	3 158	67	5	1
820–829	Fracture of Lower Limb	1 673	1 165	32 694	34 017	19·5	29·2	1·70	1·76	2 556	228	54	19
830–839	Dislocation without Fracture	637	222	3 996	1 794	6·3	8·1	0·21	0·09	838	21	....	....
840–848	Sprains and Strains of Joints and Adjacent Muscles	624	315	3 466	2 241	5·6	7·1	0·18	0·12	922	15	....	....
850–854	Intracranial Injury (excluding those with Skull Fracture)	2 705	1 273	10 512	4 535	3·9	3·6	0·55	0·24	3 873	76	29	7
860–869	Internal Injury of Chest, Abdomen and Pelvis	290	103	3 110	1 327	10·7	12·9	0·16	0·07	347	22	24	61
870–879	Laceration and Open Wound of Head, Neck and Trunk	1 159	564	5 183	2 174	4·5	3·9	0·27	0·11	1 693	30	....	....
880–887	Laceration and Open Wound of Upper Limb	1 528	376	5 534	1 461	3·6	3·9	0·29	0·08	1 872	31	1	1
890–897	Laceration and Open Wound of Lower Limb	764	344	5 467	2 521	7·2	7·3	0·28	0·13	1 095	13	....	....

Sec. XVII *–continued*													
900–907	Laceration and Open Wound of Multiple Location	236	117	1 051	602	4·5	5·1	0·05	0·03	339	13	1	2
910–918	Superficial Injury	308	163	1 395	909	4·5	5·6	0·07	0·05	467	4	....	....
920–929	Contusion and Crushing with Intact Skin Surface	780	354	3 647	2 147	4·7	6·1	0·19	0·11	1 112	22	....	....
930–939	Effects of Foreign Body Entering through Orifice	303	197	810	470	2·7	2·4	0·04	0·02	491	8	1	2
940–949	Burn	959	426	10 569	4 716	11·0	11·1	0·55	0·24	1 334	42	9	6
950–959	Injury to Nerves and Spinal Cord	106	41	887	256	8·4	6·2	0·05	0·01	142	4	1	6
960–979	Adverse Effect of Medicinal Agents	786	1 512	3 929	7 546	5·0	5·0	0·20	0·39	2 185	99	14	6
980–989	Toxic Effect of Substances Chiefly Non-Medicinal as to Source	774	427	2 196	1 221	2·8	2·9	0·11	0·06	1 183	15	3	2
990–999	Other Adverse Effects	2 246	1 443	12 933	10 195	5·8	7·1	0·67	0·53	3 560	99	30	8
Sec. Y													
Y00–Y09	Examination and Investigation of Specific Systems without reported diagnosis	1 452	3 685	4 552	8 985	3·1	2·4	0·24	0·47	5 088	46	3	1
Y10–Y19	Other Examinations Without Reported Diagnosis	9	6	51	32	5·7	5·3	0·00	0·00	14	1	....	....
Y20–Y29	Medical and Surgical Procedures without Reported Diagnosis	112	82	308	301	2·8	3·7	0·02	0·02	188	6	....	....
Y30–Y39	Medical and Surgical Aftercare without Current Complaint or Sickness	1 533	1 106	8 963	7 498	5·8	6·8	0·46	0·39	2 599	34	6	2
Y40–Y49	Persons Undergoing Preventive Measures	1 697	2 598	2 231	6 748	1·3	2·6	0·12	0·35	4 287	7	1	....
Y50–Y59	Elective Surgery	440	435	1 074	3 106	2·4	7·1	0·06	0·16	875	....	....	....
Y60–Y69	Maternal and Well-baby Care	91	739	2 083	5 591	22·9	7·6	0·11	0·29	777	53	....	....
Y70–Y79	Other Persons without Current Complaint or Sickness	136	268	605	1 659	4·4	6·2	0·03	0·09	401	3	....	....
Y80–Y89	Healthy Live Born Infants according to Type of Birth	....	....	....	....	....	....	....	....	....	....	....	....
	Total	103 075	134 559	852 000	1 076 292	8·3	8·0	44·18	55·82	228 803	5 197	3 634	15
	Grand Total, Male and Female	237 634		1 928 292		8·1		100·00					

Age Distribution of Patients Discharged by Sex and Principal Condition

I.C.D. Categories	Principal Condition	Age Groups																Total All Ages
	Males	0–4	5–9	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70+	Not Stated	
000–136	Infective and Parasitic	2 792	577	292	210	229	198	135	116	93	110	103	70	111	90	180	10	5 316
140–239	Neoplasms	75	60	58	66	75	76	86	102	143	285	328	339	463	626	1 309	2	4 093
240–279	Endocrine, Nutritional, Metabolic	253	29	42	36	43	35	41	48	42	69	76	101	97	96	191	1	1 200
280–289	Blood and Blood Forming Organs	129	92	63	26	18	26	18	14	14	17	16	28	39	28	83	....	611
290–315	Mental Disorders	83	30	28	75	124	137	131	161	186	247	293	223	139	162	168	10	2 197
320–389	Nervous System and Sense Organs	1 221	721	339	205	231	217	226	208	232	310	257	284	318	282	515	8	5 574
390–458	Circulatory System	26	40	56	53	123	164	202	280	426	606	729	857	1 099	1 123	2 116	11	7 911
460–519	Respiratory System	5 709	2 626	1 159	648	674	554	444	383	337	436	475	584	661	836	1 500	39	17 065
520–577	Digestive System	789	861	812	698	875	639	550	578	599	704	714	651	635	546	784	6	10 441
580–629	Genito-Urinary System	496	198	186	179	225	470	340	477	611	247	375	275	371	400	749	6	5 605
630–678	Pregnancy and Childbirth	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
680–709	Skin and Subcutaneous Tissue	514	330	249	323	378	297	209	174	174	190	157	147	199	136	206	9	3 692
710–738	Musculoskeletal System	107	154	154	256	357	359	372	349	349	415	353	414	335	297	398	6	4 675
740–759	Congenital Anomalies	534	230	133	47	33	34	16	11	10	14	8	17	7	7	11	1	1 113
760–779	Perinatal Morbidity	351	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	351
780–796	Symptoms and Ill-defined Conditions	1 431	625	474	344	422	429	382	409	449	471	523	435	481	486	964	18	8 343
N800–N999	Accidents, Poisoning & Violence	2 004	1 462	1 515	2 850	2 852	1 914	1 271	1 025	960	848	672	532	510	344	618	41	19 418
Y00–Y89	Supplementary Classifications	752	176	139	229	321	489	670	614	537	361	264	214	232	210	251	11	5 470
	Male Total	17 266	8 211	5 699	6 245	6 980	6 038	5 093	4 949	5 162	5 330	5 343	5 171	5 697	5 669	10 043	179	103 075
	Females																	
000–136	Infective and Parasitic	2 328	523	282	402	400	314	196	122	118	94	126	98	92	80	255	24	5 454
140–239	Neoplasms	81	57	96	154	224	224	239	269	317	384	352	382	415	391	793	2	4 380
240–279	Endocrine, Nutritional, Metabolic	291	22	53	40	64	91	96	92	97	112	131	124	140	115	264	7	1 739
280–289	Blood and Blood Forming Organs	68	48	51	21	26	25	22	30	28	31	39	28	33	28	133	1	612
290–315	Mental Disorders	81	17	38	173	267	269	277	249	195	213	221	174	157	117	245	1	2 694
320–389	Nervous System and Sense Organs	983	573	293	207	238	266	272	243	301	277	318	227	258	261	597	16	5 330
390–458	Circulatory System	14	40	47	56	112	270	344	440	489	520	542	608	705	799	2 106	11	7 103
460–519	Respiratory System	3890	2 141	992	1 018	874	655	551	425	404	363	394	440	495	437	1 033	37	14 149
520–577	Digestive System	553	838	909	1 280	1 224	911	674	521	531	538	490	529	479	454	810	9	10 750
580–629	Genito-Urinary System	174	151	145	907	2 009	2 637	2 369	2 086	1 562	1 374	973	473	325	274	410	11	15 880
630–678	Pregnancy and Childbirth	....	....	54	4 063	10 244	8 920	3 531	1 391	349	42	2	....	....	....	....	20	28 616
680–709	Skin and Subcutaneous Tissue	406	230	216	280	243	190	158	141	137	138	149	131	141	117	265	4	2 946
710–738	Musculoskeletal System	58	79	139	239	256	276	280	342	348	350	401	383	387	371	623	5	4 537
740–759	Congenital Anomalies	327	90	104	72	56	41	32	22	11	19	15	10	9	9	13	....	830
760–779	Perinatal Morbidity	303	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3	306
780–796	Symptoms and Ill-defined Conditions	1 238	625	493	761	834	692	530	495	452	442	444	383	447	402	991	14	9 243
N800–N999	Accidents, Poisoning & Violence	1 429	923	830	1 241	956	668	603	520	497	445	440	442	420	409	1 204	44	11 071
Y00–Y89	Supplementary Classifications	341	135	112	688	1 612	1 817	1 314	865	524	405	302	227	172	153	221	31	8 919
	Female Total	12 565	6 492	4 854	11 602	19 639	18 266	11 488	8 253	6 360	5 747	5 339	4 659	4 675	4 417	9 963	240	134559
	Grand Total Male and Female	29 831	14 703	10 553	17 847	26 619	24 304	16 581	13 202	11 522	11 077	10 682	9 830	10 372	10 086	20 006	419	237634

Age Distribution of Non-Aborigines Discharged by Sex and Principal Conditions

I.C.D. Category	Principal Condition	AGE GROUPS																Total All Ages
		0–4	5–9	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70+	Not Stated	
	Males																	
000–136	Infective and Parasitic	1 804	508	262	197	218	190	126	108	85	103	95	64	99	80	167	1	4 107
140–239	Neoplasms	73	57	55	66	74	76	84	101	141	285	327	335	460	619	1 304	1	4 058
240–279	Endocrine, Nutritional, Metabolic	179	27	38	36	36	34	38	45	37	61	69	92	92	87	175	....	1 046
280–289	Blood and Blood Forming Organs	100	81	60	24	18	26	15	14	13	17	16	28	39	26	81	....	558
290–315	Mental Disorders	72	24	27	70	115	131	118	141	167	226	286	217	137	155	164	4	2 054
320–389	Nervous System and Sense Organs	906	612	291	195	215	207	214	196	212	293	251	275	310	268	485	1	4 931
390–458	Circulatory System	21	33	49	52	121	157	194	268	400	591	717	841	1 074	1 108	2 098	5	7 729
460–519	Respiratory System	4 427	2 435	1 079	606	650	530	413	349	304	402	431	549	617	802	1 449	3	15 046
520–577	Digestive System	739	832	793	688	858	629	531	559	579	690	702	643	632	543	777	5	10 200
580–629	Genito-Urinary System	446	184	179	168	211	459	336	476	606	242	372	273	362	398	743	5	5 460
630–678	Pregnancy and Childbirth	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
680–709	Skin and Subcutaneous Tissue	330	205	212	303	339	275	183	152	154	175	148	137	191	129	198	1	3 132
710–738	Musculoskeletal System	97	145	146	255	352	353	356	341	343	402	348	405	331	294	394	5	4 567
740–759	Congenital Anomalies	508	225	127	47	32	34	16	11	9	14	8	17	7	6	11	....	1 072
760–779	Perinatal Morbidity	313	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	313
780–796	Symptoms and Illdefined Conditions	1 162	541	433	320	404	395	358	378	411	448	511	415	461	463	930	7	7 637
N800–N999	Accidents, Poisoning, Violence	1 801	1 330	1 437	2 722	2 725	1 819	1 186	961	866	812	651	514	477	328	605	19	18 253
Y00–Y89	Supplementary Classifications	654	174	129	222	319	483	669	610	531	357	260	210	229	204	246	4	5 301
	Male Total	13 632	7 413	5 317	5 971	6 687	5 798	4 837	4 710	4 858	5 118	5 192	5 015	5 518	5 510	9 827	61	95 464
	Females																	
000–136	Infective and Parasitic	1 530	453	262	369	376	291	181	105	112	84	119	94	90	72	247	3	4 388
140–239	Neoplasms	77	55	94	146	220	220	235	264	307	380	346	377	411	389	788	1	4 310
240–279	Endocrine, Nutritional, Metabolic	198	22	48	36	62	85	90	83	86	101	116	113	129	105	249	2	1 525
280–289	Blood and Blood Forming Organs	47	43	46	18	19	24	21	29	25	29	38	25	32	27	131	1	555
290–315	Mental Disorders	70	16	36	160	255	261	261	233	188	206	216	173	152	117	241	....	2 585
320–389	Nervous System and Sense Organs	727	483	251	177	224	249	252	226	292	272	299	220	249	252	583	2	4 758
390–458	Circulatory System	13	25	36	52	108	265	332	424	473	502	525	602	682	783	2 087	6	6 915
460–519	Respiratory System	2 966	1 995	916	968	824	611	500	371	344	323	370	410	460	415	997	7	12 477
520–577	Digestive System	527	803	895	1 256	1 202	887	657	497	514	529	480	523	476	443	807	2	10 498
580–629	Genito-Urinary System	148	135	129	845	1 931	2 580	2 321	2 064	1 534	1 360	962	466	320	268	402	1	15 466
630–678	Pregnancy and Childbirth	....	....	40	3 645	9 849	8 678	3 402	1 310	326	39	2	....	....	....	....	4	27 295
680–709	Skin and Subcutaneous Tissue	250	138	164	251	221	164	141	129	117	121	141	123	135	113	252	1	2 461
710–738	Musculoskeletal System	52	75	134	236	251	271	277	337	341	343	398	373	384	369	618	1	4 460
740–759	Congenital Anomalies	313	80	100	71	56	40	32	21	11	19	14	10	9	9	13	....	798
760–779	Perinatal Morbidity	281	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3	284
780–796	Symptoms and Illdefined Conditions	1 016	539	443	704	788	636	489	468	414	413	427	376	426	385	968	1	8 493
N800–N999	Accidents, Poisoning, Violence	1 254	830	781	1 168	841	584	495	431	416	409	408	423	393	389	1 183	11	10 016
Y00–Y89	Supplementary Classifications	286	125	103	605	1 525	1 739	1 266	831	511	401	293	223	164	150	214	5	8 441
	Female Total	9 755	5 817	4 478	10 707	18 752	17 585	10 952	7 823	6 011	5 531	5 154	4 531	4 512	4 286	9 780	51	125725
	Grand Total, Male and Female	23 387	13 230	9 795	16 678	25 439	23 383	15 789	12 533	10 869	10 649	10 346	9 546	10 030	9 796	19 607	112	221189

W.A. HOSPITALS, 1973

Patients Discharged by Race and Principal Condition

I.C.D. Category	Principal Condition Groups	Discharges					Days in Hospital					Average Number of Days in Hospital			% of Total Bed Days		
		Aboriginal		Non-Aboriginal		Total	Aboriginal		Non-Aboriginal		Total	Aboriginal	Non-Aboriginal	Total	Aboriginal	Non-Aboriginal	Total
		Number	% for Group	Number	% for Group		Number	% for Group	Number	% for Group							
000–136	Infective and Parasitic	2 275	21·1	8 495	78·9	10 770	31 485	35·6	57 069	64·4	88 554	13·9	6·7	8·2	1·63	2·96	4·59
140–239	Neoplasms	105	1·2	8 368	98·8	8 473	1 611	1·4	109 671	98·6	111 282	15·3	13·1	13·1	0·08	5·69	5·77
240–279	Endocrine, Nutritional, Metabolic	368	12·5	2 571	87·5	2 939	5 913	14·8	34 071	85·2	39 984	16·1	13·3	13·6	0·31	1·77	2·07
280–289	Blood and Blood Forming Organs....	110	9·0	1 113	91·0	1 223	1 189	10·7	9 887	89·3	11 076	10·8	8·9	9·1	0·06	0·51	0·57
290–315	Mental Disorders	252	5·2	4 639	94·8	4 891	2 263	3·5	62 466	96·5	64 729	9·0	13·5	13·2	0·12	3·24	3·36
320–389	Nervous System and Sense Organs	1 215	11·1	9 689	88·9	10 904	12 803	15·3	71 109	84·7	83 912	10·5	7·3	7·7	0·66	3·69	4·35
390–458	Circulatory System	370	2·5	14 644	97·5	15 014	5 744	2·5	223 818	97·5	229 562	15·5	15·3	15·3	0·30	11·61	11·90
460–519	Respiratory System	3 691	11·8	27 523	88·2	31 214	30 903	15·6	167 494	84·4	198 397	8·4	6·1	6·4	1·60	8·69	10·29
520–577	Digestive System	493	2·3	20 698	97·7	21 191	3 935	2·4	159 295	97·6	163 230	8·0	7·7	7·7	0·20	8·26	8·47
580–629	Genito-Urinary System	559	2·6	20 926	97·4	21 485	4 593	3·5	126 048	96·5	130 641	8·2	6·0	6·1	0·24	6·54	6·77
630–678	Pregnancy and Childbirth	1 321	4·6	27 295	95·4	28 616	11 815	5·6	199 815	94·4	211 630	8·9	7·3	7·4	0·61	10·36	10·97
680–709	Skin and Subcutaneous Tissue	1 045	15·7	5 593	84·3	6 638	8 804	18·8	38 031	81·2	46 835	8·4	6·8	7·1	0·46	1·97	2·43
710–738	Musculoskeletal System	185	2·0	9 027	98·0	9 212	2 495	2·3	104 644	97·7	107 139	13·5	11·6	11·6	0·13	5·43	5·56
740–759	Congenital Anomalies	73	3·8	1 870	96·2	1 943	1 284	6·6	18 180	93·4	19 464	17·6	9·7	10·0	0·07	0·94	1·01
760–779	Perinatal Morbidity	60	9·1	597	90·9	657	1 349	13·6	8 559	86·4	9 908	22·5	14·3	15·1	0·07	0·44	0·51
780–796	Symptoms and Illdefined Conditions	1 456	8·3	16 130	91·7	17 586	9 297	7·2	119 741	92·8	129 038	6·4	7·4	7·3	0·48	6·21	6·69
N800–N999	Accidents, Poisoning, Violence	2 220	7·3	28 269	92·7	30 489	15 954	7·0	213 170	93·0	229 124	7·2	7·5	7·5	0·83	11·05	11·88
Y00–Y89	Supplementary Classifications	647	4·5	13 742	95·5	14 389	6 526	12·1	47 261	87·9	53 787	10·1	3·4	3·7	0·34	2·45	2·79
	Total	16 445	6·9	221 189	93·1	237 634	157 963	8·2	1 770 329	91·8	1 928 292	9·6	8·0	8·1	8·19	91·81	100·00

W.A. HOSPITALS 1973

Patients Discharged by Principal Condition and Type of Hospital

I.C.D. Categories	Principal Condition Groups	Discharges							Days in Hospital							Average Number of Days in Hospital				Percentage of Total Bed Days			
		Teaching		Private		Other Govt. and Board		All Hospitals	Teaching		Private		Other Govt. and Board		All Hospitals	Teaching	Private	Other Govt. and Board	All Hospitals	Teaching	Private	Other Govt. and Board	All Hospitals
		No.	% for Group	No.	% for Group	No.	% for Group		No.	% for Group	No.	% for Group	No.	% for Group									
000–136	Infective and Parasitic	2 738	25·4	1 126	10·5	6 906	64·1	10 770	30 926	34·9	5 675	6·4	51 953	58·7	88 554	11·3	5·0	7·5	8·2	1·60	0·29	2·69	4·59
140–239	Neoplasms	4 471	52·8	1 939	22·9	2 063	24·3	8 473	64 518	58.0	17 517	15·7	29 247	26·3	111 282	14·4	9·0	14·2	13·1	3·35	0·91	1·52	5·77
240–279	Endocrine, Nutritional. Metabolic	1 007	34.3	510	17·4	1 422	48·4	2 939	13 779	34·5	6 073	15·2	20 132	50·4	39 984	13·7	11·9	14·2	13·6	0·71	0·31	1·04	2·07
280–289	Blood and Blood Forming Organs	496	40·6	209	17·1	518	42·4	1 223	3 724	33·6	2 585	23·3	4 767	43·0	11 076	7·5	12·4	9·2	9·1	0·19	0·13	0·25	0·57
290–315	Mental Disorders	1 899	38·8	977	20·0	2 015	41·2	4 891	30 063	46·4	13 816	21·3	20 850	32·2	64 729	15·8	14·1	10·3	13·2	1·56	0·72	1·08	3·36
320–389	Nervous System and Sense Organs	3 922	36·0	3 366	30·9	3 616	33·2	10 904	36 954	44·0	15 996	19·1	30 962	36·9	83 912	9·4	4·8	8·6	7·7	1·92	0·83	1·61	4·35
390–458	Circulatory System	5 915	39·4	2 815	18·7	6 284	41·9	15 014	90 236	39·3	37 674	16·4	101 652	44·3	229 562	15·3	13·4	16·2	15·3	4·68	1·95	5·27	11·90
460–519	Respiratory System	7 323	23·5	6 093	19·5	17 798	57·0	31 214	46 285	23·3	29 030	14·6	123 082	62·0	198 397	6·3	4·8	6·9	6·4	2·40	1·51	6·38	10·29
520–577	Digestive System	5 250	24·8	6 677	31·5	9 264	43·7	21 191	52 584	32·2	45 854	28·1	64 792	39·7	163 230	10·0	6·9	7·0	7·7	2·73	2·38	3·36	8·47
580 629	Genito-Urinary System	6 391	29·7	6 789	31·6	8 305	38·7	21 485	35 335	27·0	47 151	36·1	48 155	36·9	130 641	5·5	6·9	5·8	6·1	1·83	2·45	2·50	6·77
630 678	Pregnancy and Childbirth	5 775	20·2	7 720	27·0	15 121	52·8	28 616	39 039	18·4	61 702	29·2	110 889	52·4	211 630	6·8	8·0	7·3	7·4	2·02	3·20	5·75	10·97
680–709	Skin and Subcutaneous Tissue	1 075	16·2	1 901	28·6	3 662	55·2	6 638	10 513	22·4	10 264	21·9	26 058	55·6	46 835	9·8	5·4	7·1	7·1	0·55	0·53	1·35	2·43
710–738	Musculoskeletal System	2 952	32·0	3 061	33·2	3 199	34·7	9 212	49 891	46·6	24 931	23·3	32 317	30·2	107 139	16·9	8·1	10·1	11·6	2·59	1·29	1·68	5·56
740–759	Congenital Anomalies	1 283	66·0	374	19·2	286	14·7	1 943	15 844	81·4	1 694	8·7	1 926	9·9	19 464	12·3	4·5	6·7	10·0	0·82	0·09	0·10	1·01
760–779	Perinatal Morbidity	135	20·5	203	30·9	319	48·6	657	1 429	14·4	3 510	35·4	4 969	50·2	9 908	10·6	17·3	15·6	15·1	0·07	0·18	0·26	0·51
780–796	Symptoms and Illdefined Conditions	4 176	23·7	2 539	14·4	10 871	61·8	17 586	24 364	18·9	22 092	17·1	82 582	64·0	129 038	5·8	8·7	7·6	7·3	1·26	1·15	4·28	6·69
N800–N999	Accidents, Poisoning, Violence	13 363	43·8	2 840	9·3	14 286	46·9	30 489	124 592	54·4	19 018	8·3	85 514	37·3	229 124	9·3	6·7	6·0	7·6	6·46	0·99	4·43	11·88
Y00–Y89	Supplementary Classifications	2 873	20·0	5 918	41·1	5 598	38·9	14 389	14 481	26·9	19 906	37·0	19 400	36·1	53 787	5·0	3·4	3·5	3·7	0·75	1·03	1·01	2·79
	Total	71 044	29·9	55 057	23·2	111 533	46·9	237 634	684 657	35·5	384 488	19·9	859 147	44·6	1928292	9·6	7·0	7·7	8·1	35·51	19·94	44·55	100·00

W.A. HOSPITALS, 1973

Patients Discharged by Principal Condition and Type of Hospital

I.C.D. Categories	Principal Condition Groups	Discharges														
		Metropolitan								Country						State Total
		Teaching		Government		Private		Total		Govt. and Board		Private		Total		
		Number	% for Group	Number	% for Group	Number	% for Group	Number	% for Group	Number	% for Group	Number	% for Group	Number	% for Group	
000–136	Infective and Parasitic	2 738	25·42	741	6·88	626	5·81	4 105	38·12	6 165	57·24	500	4·64	6 665	61·88	10 770
140–239	Neoplasms	4 471	52·77	1 211	14·29	1 840	21·72	7 522	88·78	852	10·06	99	1·17	951	11·22	8 473
240–279	Endocrine, Nutritional, Metabolic	1 007	34·26	250	8·51	414	14·09	1 671	56·86	1 172	39·88	96	3·27	1 268	43·14	2 939
280–289	Blood and Blood Forming Organs	496	40·56	124	10·14	183	14·96	803	65·66	394	32·22	26	2·13	420	34·34	1 223
290–315	Mental Disorders	1 899	38·83	685	14·01	868	17·75	3 452	70·58	1 330	27·19	109	2·23	1 439	29·42	4 891
320–389	Nervous System and Sense Organs	3 922	35·97	682	6·25	3 181	29·17	7 785	71·40	2 934	26·91	185	1·70	3 119	28·60	10 904
390–458	Circulatory System	5 915	39·40	2 013	13·41	2 423	16·14	10 351	68·94	4 271	28·45	392	2·61	4 663	31·06	15 014
460–519	Respiratory System	7 323	23·46	3 062	9·81	5 001	16·02	15 386	49·29	14 736	47·21	1 092	3·50	15 828	50·71	31 214
520–577	Digestive System	5 250	24·77	3 071	14·49	5 554	26·21	13 875	65·48	6 193	29·22	1 123	5·30	7 316	34·52	21 191
580–629	Genito-Urinary System	6 391	29·75	3 482	16·21	6 303	29·34	16 176	75·29	4 823	22·45	486	2·26	5 309	24·71	21 485
630–678	Pregnancy and Childbirth	5 775	20·18	7 149	24·98	7 122	24·89	20 046	70·05	7 972	27·86	598	2·09	8 570	29·95	28 616
680–709	Skin and Subcutaneous Tissue	1 075	16·19	816	12·29	1 718	25·88	3 609	54·37	2 846	42·87	183	2·76	3 029	45·63	6 638
710–738	Musculoskeletal System	2 952	32·05	1 147	12·45	2 890	31·37	6 989	75·87	2 052	22·28	171	1·86	2 223	24·13	9 212
740–759	Congenital Anomalies	1 283	66·03	132	6·79	361	18·58	1 776	91·41	154	7·93	13	0·67	167	8·59	1 943
760–779	Perinatal Morbidity	135	20·55	132	20·09	188	28·61	455	69·25	187	28·46	15	2·28	202	30·75	657
780–796	Symptoms and Illdefined Conditions	4 176	23·75	1 409	8·01	1 858	10·57	7 443	42·32	9 462	53·80	681	3·87	10 143	57·68	17 586
N800–N999	Accidents, Poisoning, Violence	13 363	43·83	1 756	5·76	2 207	7·24	17 326	56·83	12 530	41·10	633	2·08	13 163	43·17	30 489
Y00–Y89	Supplementary Classifications....	2 873	19·97	2 365	16·44	5 626	39·10	10 864	75·50	3 233	22·47	292	2·03	3 525	24·50	14 389
	Total	71 044	29·90	30 227	12·72	48 363	20·35	149 634	62·97	81 306	34·21	6 694	2·82	88 000	37·03	237 634

Operation Cases Discharged During 1973

Code of Surgical Procedures	Operation Group	Number of Cases		Number Days in Hospital		Average Number Days in Hospital		Per cent. of Operation Bed Days		Outcome			
		Male	Female	Male	Female	Male	Female	Male	Female	Discharged	Transferred	Died	Deaths per 1,000 Separations
Sec. I													
001–019	Skull, Brain and Cerebral Meninges	278	137	7 849	3 082	28·2	22·5	0·96	0·38	288	62	65	156
020–029	Spine and Spinal Cord	864	531	13 053	8 941	15·1	16·8	1·60	1·10	1 286	85	24	17
030–035	Cranial Nerves	35	33	205	183	5·9	5·5	0·03	0·02	60	8	....	....
036–039	Autonomic Nervous System (Sympathetic and Parasympathetic)	115	62	2 605	1 179	22·7	19·0	0·32	0·14	168	3	6	33
040–049	Peripheral Nerves	402	521	1 810	2 657	4·5	5·1	0·22	0·33	915	7	1	1
Sec. II													
061–063	Pituitary	3	5	88	92	29·3	18·4	0·01	0·01	5	3	....	....
065–069	Adrenal	4	8	101	185	25·3	23·1	0·01	0·02	11	....	1	83
071–076	Thyroid and Parathyroid	31	159	320	1 415	10·3	8·9	0·04	0·17	189	1	....	....
077–079	Thymus and Carotid Body	1	1	15	20	15·0	20·0	0·00	0·00	2	....	....	....
080–089	Surgery of Neck	289	274	3 592	2 938	12·4	10·7	0·44	0·36	515	34	14	24
Sec. III													
100–109	Orbit and Globe	69	45	878	619	12·7	13·8	0·11	0·08	112	1	1	8
110–115	Eye Muscles of Globe	344	351	1 398	1 214	4·1	3·5	0·17	0·15	695	....	....	....
117–129	Eyelids	342	336	1 908	1 459	5·6	4·3	0·23	0·18	676	2	....	....
132–139	Conjunctiva	407	245	1 449	559	3·6	2·3	0·18	0·07	652	....	....	....
140–149	Cornea	94	39	898	700	9·6	17·9	0·11	0·09	132	1	....	....
150–159	Iris and Ciliary Body	64	46	707	537	11·0	11·6	0·09	0·07	108	1	1	9
160–169	Sclera, Choroid, Retina and Vitreous	130	94	1 262	1 071	9·7	11·4	0·15	0·13	223	1	....	....
170–179	Lens	424	407	5 726	5 213	13·5	12·8	0·70	0·64	824	5	2	2
180–189	Lacrimal Apparatus	167	190	336	498	2·0	2·6	0·04	0·06	357	....	....	....
Sec. IV													
190–209	Ear	1 250	1 037	4 161	4 304	3·3	4·2	0·51	0·53	2 264	20	3	1
210–224	Nose	1 635	1 023	5 713	4273	3·5	4·1	0·70	0·52	2 654	3	1	....
225–229	Accessory Air Sinuses and other Parts of Face	137	101	642	505	4·7	5·0	0·08	0·06	237	1	....	....
230–239	Naso-pharynx	2 731	3 028	8 122	9 472	3·0	3·1	1·00	1·16	5 749	10	....	....
240–249	Larynx and Trachea	352	148	5 003	2 155	14·2	14·6	0·61	0·26	458	15	27	54
Sec. V													
250–259	Teeth and Jaws	1 769	2 561	3 902	5 016	2·2	2·0	0·48	0·61	4 324	4	2	....
260–267	Tongue and Mouth	127	79	688	333	5·4	4·2	0·08	0·04	204	2	....	....
270–273	Salivary Glands (Parotid, Sublingual, Submandibular Glands)	74	68	414	439	5·6	6·5	0·05	0·05	140	2	....	....
280–283	Pharynx	10	8	57	111	5·7	13·9	0·01	0·01	17	1	....	....
290–299	Oesophagus	371	268	3 186	1 552	8·5	5·8	0·39	0·19	618	7	14	21

W.A. HOSPITALS—*continued*

Operation Cases Discharged During 1973—continued

Code of Surgical Procedures	Operation Group	Number of Cases		Number Days in Hospital		Average Number Days in Hospital		Per cent. of Operation Bed Days		Outcome			
		Male	Female	Male	Female	Male	Female	Male	Female	Discharged	Transferred	Died	Deaths per 1,000 Separations
Sec. VI													
300–309	Heart	277	207	3 698	2 664	13·4	12·9	0·45	0·33	425	21	38	78
320–329	Intra Thoracic Vessels	51	28	818	363	16·0	13·0	0·10	0·04	74	3	2	25
330–339	Thoracic Cage	220	98	4 463	1 956	20·3	20·0	0·55	0·24	280	12	26	81
340–349	Lung and Bronchus	317	88	5 247	1 144	16·6	13·0	0·64	0·14	380	10	15	37
Sec. VII													
380–389	Breast	87	1 729	423	12 575	4·9	7·3	0·05	1·54	1 806	7	3	1
Sec. VIII													
400–409	Abdominal Wall	276	883	4 922	8 120	17·8	9·2	0·60	0·99	1 068	20	71	61
410–419	Hernia	2 138	581	18 205	5 591	8·5	9·6	2·23	0·69	2 696	17	6	2
420–439	Stomach	914	450	11 716	5 488	12·8	12·2	1·44	0·67	1 300	33	31	22
440–445	Appendix	1 776	2 263	12 198	15 608	6·9	6·9	1·49	1·91	3 998	37	4	1
446	Other Diverticulae	7	7	111	73	15·9	10·4	0·01	0·01	14	....	....	....
450–469	Small Intestine-Colon	491	539	7 776	8 658	15·8	16·1	0·95	1·06	954	33	43	41
470–479	Rectum	120	102	2 726	1 897	22·7	18·6	0·33	0·23	214	1	7	31
480–499	Anus	1 230	892	10 389	7 381	8·4	8·3	1·27	0·90	2 115	6	1	....
500–509	Liver	73	65	1 060	826	14·5	12·7	0·13	0·10	128	3	7	50
510–519	Bile Ducts	24	49	522	1 058	21·8	21·6	0·06	0·13	69	1	3	41
520–529	Gall Bladder	395	1 321	6 891	18 508	17·4	14·0	0·84	2·27	1 681	16	19	11
530–539	Pancreas	4	6	53	383	13·3	63·8	0·01	0·05	9	....	1	100
540–549	Spleen and Abdominal Venous System	68	25	1 214	608	17·9	24·3	0·15	0·07	89	2	2	21
550–559	Abdominal Structures, N.E.C.	54	14	916	274	17·0	19·6	0·11	0·03	42	9	17	250
Sec. IX													
560–579	Kidney	264	226	3 797	3 933	14·4	17·4	0·47	0·48	473	8	9	18
580–589	Ureter	349	320	2 845	2 005	8·2	6·3	0·35	0·25	662	2	5	7
600–619	Urinary Bladder	1 841	1 107	10 948	4 926	5·9	4·4	1·34	0·60	2 892	26	30	10
620–629	Urethra	365	112	2 066	673	5·7	6·0	0·25	0·08	474	3	....	....
630–637	Prostate	807	....	15 845	....	19·6	....	1·94	....	772	15	20	24
639	Seminal Vesicles	1	....	14	....	14·0	....	0·00	....	1	....	....	....
640–669	Testis, Epididymis and Scrotum	3 502	....	9 186	....	2·6	....	1·13	....	3 496	4	2	....
Sec. X													
671–679	Ovary	....	375	....	3 740	....	10·0	....	0·46	373	2	....	....
681–689	Oviduct (Fallopian Tube)	....	4 782	....	27 716	....	5·8	....	3·40	4 767	13	2	....
690–709	Uterus (Hysterectomy)	....	10 446	....	49 034	....	4·7	....	6·01	10 413	31	2	....
710–729	Vagina	....	653	....	8 184	....	12·5	....	1·00	649	3	1	1
730–739	Introitus, Vulva, Labia and Perineum	....	405	....	1 875	....	4·6	....	0·23	405	....	....	....

Sec. XI													
740–750	Ante-natal Obstetric Operations	....	2 148	....	9 024	....	4·2	....	1·11	2 136	11	1	....
751–769	Delivery Obstetrie Operations	....	4 776	....	47 178	....	9·9	....	5·78	4 761	13	2	....
770–779	Post-Natal or Post-Abortion Obstetrie Operations	....	1 768	....	7 901	....	4·5	....	0·97	1 763	5	....	....
Sec. XII													
780–788	Treatment of Fractures	2 351	1 604	28 185	21 195	12·0	13·2	3·45	2·60	3 843	68	44	11
790–799	Bone	615	658	9 071	10 128	14·7	15·4	1·11	1·24	1 238	18	17	13
800–822	Joints	2 439	2 038	22 516	26 430	9·2	13·0	2·76	3·24	4 429	36	12	2
825–826	Capsule and Ligaments of Joints	96	36	688	309	7·2	8·6	0·08	0·04	132	....	....	....
827–828	Bursae	78	23	607	135	7·8	5·9	0·07	0·02	100	1	....	....
830–839	Muscles	60	45	516	878	8·6	19·5	0·06	0·11	100	3	2	19
840–852	Tendon	706	574	2 960	2 970	4·2	5·2	0·36	0·36	1 278	2	....	....
854–859	Fascia	160	44	851	308	5·3	7·0	0·10	0·04	202	2	....	....
860–879	Amputations and Other Operations on Limbs	358	162	6 723	4 104	18·8	25·3	0·82	0·50	488	17	15	28
Sec. XIII													
880–889	Arteries	281	149	3 169	1 640	11·3	11·0	0·39	0·20	390	20	20	46
890–898	Veins	396	1 303	4 190	12 794	10·6	9·8	0·51	1·57	1 685	11	3	1
900–909	Lymphatics	72	70	1 378	785	19·1	11·2	0·17	0·10	136	4	2	14
Sec. XIV													
910–929	Skin and Subcutaneous Tissue	5 198	3 825	28 097	20 466	5·4	5·4	3·44	2·51	8 948	63	12	1
930–939	Plastic Operations	890	628	8 979	6 051	10·1	9·6	1·10	0·74	1 513	5	....	....
Sec. XV													
940–950	Injection for General Action	2 233	1 484	8 469	7 600	3·8	5·1	1·04	0·93	3 591	27	99	26
952–959	Operations with Site Unspecified	3	6	39	35	13·0	5·8	0·00	0·00	9	....	....	....
960–969	Non-operative Procedures	404	462	2 852	4 417	7·1	9·6	0·35	0·54	845	16	5	5
970–979	Anaesthetic Procedures	107	297	296	1 244	2·8	4·2	0·04	0·15	404	....	....	....
980–999	Diagnostic Radiographic Techniques	837	960	14 476	16 316	17·3	17·0	1·77	2·00	1 576	102	119	66
	Total	45 454	62 638	358 199	457 894	7·9	7·3	43·89	56·11				
	Grand Total Male and Female	108 092		816 093		7·5		100·00		106 169	1 041	882	8

Age Distribution of Operation Cases by Sex and Operation

Code of Surgical Procedures	Operation Group	Five Year Age Groups																Total All Ages
	Males	0–4	5–9	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70+	Not Stated	
001–049	Nervous System	52	24	39	79	116	125	106	165	160	192	160	153	116	104	102	1	1 694
061–089	Endocrine System	37	15	4	17	26	24	20	19	24	32	32	29	13	20	16	....	328
100–189	Eye	301	149	111	83	106	83	82	78	74	137	101	131	175	156	273	1	2 041
190–249	Ear, Nose and Throat	741	1 667	688	469	497	407	280	211	192	216	164	153	134	125	154	7	6 105
250–299	Upper Alimentary Tract	243	384	182	241	287	168	118	122	78	101	87	71	86	64	116	3	2 351
300–349	Thorax	50	16	15	34	39	31	22	33	49	69	105	98	86	100	117	1	865
380–389	Breast	2	....	8	15	15	4	2	5	5	3	....	6	6	9	7	....	87
400–559	Abdomen	453	394	524	432	517	508	443	465	494	630	591	542	520	459	594	4	7 570
560–669	Urinary and Male Genital Organs	814	276	181	136	251	490	708	629	525	366	282	317	480	588	1 080	6	7 129
780–879	Orthopaedic	230	439	522	851	931	663	459	418	408	412	326	360	284	234	320	6	6 863
880–909	Peripheral Circulation	7	9	5	14	35	41	44	46	64	84	94	79	80	68	79	....	749
910–939	Skin and Subcutaneous Tissue	572	551	495	695	690	491	339	292	293	306	292	246	257	232	331	6	6 088
940–999	Other Surgical Procedures	196	80	94	140	133	366	251	361	553	186	334	199	183	165	339	4	3 584
	Male Total, All Operations	3 698	4 004	2 868	3 206	3 643	3 401	2 874	2 844	2 919	2 734	2 568	2 384	2 420	2 324	3 528	39	45 454
	Females																	
001–049	Nervous System	32	17	24	69	72	87	113	139	141	128	136	103	78	48	96	1	1 284
061–089	Endocrine System	45	10	19	18	31	38	41	45	46	41	33	26	22	18	14	....	447
100–189	Eye	289	137	54	64	61	67	68	58	81	96	120	82	103	141	326	6	1 753
190–249	Ear, Nose and Throat	562	1 492	656	636	508	320	231	187	147	118	139	114	81	61	83	2	5 337
250–299	Upper Alimentary Tract	196	455	273	419	433	276	161	117	114	108	97	100	69	61	102	3	2 984
300–349	Thorax	49	15	12	18	18	16	17	18	25	34	29	38	39	33	60	....	421
380–389	Breast	6	2	11	91	166	275	197	190	189	229	117	69	62	49	76	....	1 729
400–559	Abdomen	186	295	516	771	795	711	563	406	428	445	409	398	367	377	529	1	7 197
560–669	Urinary and Male Genital Organs	33	45	36	76	135	135	134	146	123	132	140	151	127	166	184	2	1 765
671–739	Female Genital Tract	16	14	28	731	2 467	3 547	3 089	2 385	1 598	1 206	707	354	183	145	188	3	16 661
740–779	Obstetric	....	....	40	1 443	2 838	2 658	1 091	467	131	20	2	....	....	....	....	2	8 692
780–879	Orthopaedic	179	307	359	342	297	243	237	257	303	318	394	384	405	349	806	4	5 184
880–909	Peripheral Circulation	5	10	3	16	50	146	197	234	207	188	152	98	91	58	66	1	1 522
910–939	Skin and Subcutaneous Tissue	410	396	379	538	439	284	269	213	210	222	220	180	203	155	331	4	4 453
940–999	Other Surgical Procedures	157	65	67	125	177	204	252	291	230	295	364	163	178	199	441	1	3 209
	Female Total, All Operations	2 165	3 260	2 477	5 357	8 487	9 007	6 660	5 153	3 973	3 580	3 059	2 260	2 008	1 860	3 302	30	62 638
	Grand Total, Male and Female	5 863	7 264	5 345	8 563	12 130	12 408	9 534	7 997	6 892	6 314	5 627	4 644	4 428	4 184	6 830	69	108 092

W.A. HOSPITALS, 1973

Patients Discharged by Operation Group and Type of Hospital

Code of Surgical Procedures	Operation Groups	Discharges							Days in Hospital							Average Number of Days in Hospital				Per cent. of Total Bed Days			
		Teaching		Private		Other Govt. and Board		All Hospitals	Teaching		Private		Other Govt. and Board		All Hospitals	Teaching	Private	Other Govt. and Board	All Hospitals	Teaching	Private	Other Govt. and Board	All Hospitals
		No.	% for Group	No.	% for Group	No.	% for Group		No.	% for Group	No.	% for Group	No.	% for Group									
001–049	Nervous System	1 803	60·5	825	27·7	350	11·8	2 978	31 927	76·8	6 034	14·5	3 603	8·7	41 564	17·7	7·3	10·3	14·0	3·91	0·74	0·44	5·09
061–089	Endocrine System	543	70·1	171	22·1	61	7·9	775	6 997	79·8	1 371	15·6	398	4·5	8 766	12·9	8·0	6·5	11·3	0·86	0·17	0·05	1·07
100–189	Eye	1 552	40·9	1 766	46·5	476	12·5	3 794	14 463	54·7	8 594	32·5	3 375	12·8	26 432	9·3	4·9	7·1	7·0	1·77	1·05	0·41	3·24
190–249	Ear, Nose and Throat	2 570	22·5	6 050	52·9	2 822	24·7	11 442	15 226	34·3	19 402	43·7	9 725	21·9	44 353	5·9	3·2	3·4	3·9	1·87	2·38	1·19	5·43
250–299	Upper Alimentary Tract	1 110	20·8	2 149	40·3	2 076	38·9	5 335	7 268	46·3	4 706	30·0	3 724	23·7	15 698	6·5	2·9	1·8	2·9	0·89	0·58	0·46	1·92
300–349	Thorax	1 232	95·8	24	1·9	30	2·3	1 286	19 597	96·3	185	0·9	571	2·8	20 353	15·9	7·7	19·0	15·8	2·40	0·02	0·07	2·49
380–389	Breast	287	15·8	1 079	59·4	450	24·8	1 816	3 432	26·4	7 157	55·1	2 409	18·5	12 998	12·0	6·6	5·4	7·2	0·42	0·88	0·30	1·59
400–559	Abdomen	5 066	34·3	5 097	34·5	4 604	31·2	14 767	64 920	42·4	46 648	30·5	41 604	27·2	153 172	12·8	9·2	9·0	10·4	7·95	5·72	5·10	18·77
560–669	Urinary and Male Genital Organs	2 955	33·2	3 467	39·0	2 472	27·8	8 894	29 197	51·9	15 000	26·7	12 041	21·4	56 238	9·9	4·3	4·9	6·3	3·58	1·84	1·48	6·89
671–739	Female Genital Tract	2 583	15·5	6 488	38·9	7 590	45·6	16 661	18 103	20·0	36 895	40·7	35 551	39·3	90 549	7·0	5·7	4·6	5·4	2·22	4·52	4·36	11·10
740–779	Obstetric	3 532	40·6	3 017	34·7	2 143	24·7	8 692	25 771	40·2	24 787	38·7	13 545	21·1	64 103	7·3	8·2	6·3	7·4	3·16	3·04	1·66	7·85
780–879	Orthopaedic	5 902	49·0	3 604	29·9	2 541	21·1	12 047	90 223	65·1	25 432	18·4	22 919	16·5	138 574	15·3	7·1	9·0	11·5	11·06	3·12	2·81	16·98
880–909	Peripheral Circulation	669	29·5	1 046	46·1	556	24·5	2 271	9 586	40·0	8 698	36·3	5 672	23·7	23 956	14·3	8·3	10·2	10·5	1·17	1·07	0·70	2·94
910–939	Skin and Subcutaneous Tissue	3 599	34·1	3 478	33·0	3 464	32·9	10 541	30 133	47·4	16 610	26·1	16 850	26·5	63 593	8·4	4·8	4·9	6·0	3·69	2·04	2·06	7·79
940–999	Other Surgical Procedures	5 688	83·7	579	8·5	526	7·7	6 793	50 041	89·8	3 732	6·7	1 971	3·5	55 744	8·8	6·4	3·7	8·2	6·13	0·46	0·24	6·83
	Total, All Operations	39 001	36·1	38 840	35·9	30 251	28·0	108 092	416 884	51·1	225 251	27·6	173 958	21·3	816 093	10·7	5·8	5·8	7·5	51·08	27·60	21·32	100·00

W.A. HOSPITALS

Accidents, Poisoning and Violence—Discharged During 1973

I.C.D. Categories	External Cause	Number of Cases		Number Days in Hospital		Average Number Days in Hospital		Per cent. of Total Bed Days		Outcome			
		Male	Female	Male	Female	Male	Female	Male	Female	Discharged	Transferred	Died	Deaths per 1,000 Separations
800–807	Railway Accidents	25	3	454	3	18·2	1·0	0·17	0·00	24	2	2	71
810–819	Motor Vehicle Traffic Accidents	3 575	1 752	36 709	17 812	10·3	10·2	13·76	6·68	5 004	227	96	18
820–823	Motor Vehicle Non-Traffic Accidents	115	19	1 277	110	11·1	5·8	0·48	0·04	128	6	....	....
825–827	Other Road Vehicle Accidents	282	207	1 166	905	4·1	4·4	0·44	0·34	484	4	1	2
830–838	Water Transport Accidents	60	6	838	32	14·0	5·3	0·31	0·01	63	1	2	30
840–845	Air and Space Transport Accidents	12	4	147	12	12·3	3·0	0·06	0·00	16	....	....	....
850–859	Accidental Poisoning by Drugs and Medicaments	271	341	956	1 718	3·5	5·0	0·36	0·64	601	5	6	10
860–869	Accidental Poisoning by Other Solid and Liquid Substances	392	235	1 090	768	2·8	3·3	0·41	0·29	621	6	....	....
870–877	Accidental Poisoning by Gases and Vapours	32	15	87	23	2·7	1·5	0·03	0·01	47	....	....	....
880–887	Accidental Falls	3 898	2 903	30 436	39 567	7·8	13·6	11·41	14·84	6 418	304	79	12
890–899	Accidents Caused by Fires and Flames	513	258	6 437	2 761	12·5	10·7	2·41	1·04	735	30	6	8
900–909	Accidents Due to Natural and Environmental Factors	507	298	1 562	1 016	3·1	3·4	0·59	0·38	793	10	2	2
910–929	Other Accidents	7 502	2 803	37 607	15 573	5·0	5·6	14·10	5·84	10 096	189	20	2
930–936	Surgical and Medical Complications and Misadventures	958	1 095	14 297	15 212	14·9	13·9	5·36	5·70	1 943	43	67	33
940–949	Late Effects of Accidental Injury	979	527	14 701	8 234	15·0	15·6	5·51	3·09	1 442	47	17	11
950–959	Suicide and Self-inflicted Injury	469	915	3 566	5 503	7·6	6·0	1·34	2·06	1 266	99	19	14
960–969	Homicide and Injury Purposely Inflicted by Other Persons	647	243	2 837	1 256	4·4	5·2	1·06	0·47	867	18	5	6
970–978	Legal Intervention	1	....	6	....	6·0	....	0·00	....	1	....	....	....
980–989	Injury Undetermined Whether Accidentally or Purposely Inflicted	123	282	823	1 027	6·7	3·6	0·31	0·39	390	15	....	....
990–999	Injury Resulting from Operations of War	9	....	156	....	17·3	....	0·06	....	9	....	....	....
	Total	20 370	11 906	155 152	111 532	7·6	9·4	58·18	41·82	30 948	1 006	322	10
	Grand Total, Male and Female	32 276		266 684		8·3		100·00					

W.A. HOSPITAL DISCHARGES, 1973.

External Cause and Nature of Injury of Accidents, Poisoning and Violence

NATURE OF INJURY

I.C.D. Code	External Cause of Injury	Patients Age and Hospital Stay	Fracture of Spine, Skull and Trunk N800–N809		Fracture of Upper Limb N810–N819		Fracture of Lower Limb N820–N829		Dislocation Without Fracture N830–N839		Sprains and Strains of Joints and Muscles N840–N848		Intra-cranial Injury Without Skull Fracture N850–N854		Internal Injury of Chest, Abdomen and Pelvis N860–N869		Laceration and Open Wound of Head, Neck and Trunk N870–N879		Laceration and Open Wound of Upper Limb N880–N887		Laceration and Open Wound of Lower Limb N890–N897		Laceration and Open Wound of Multiple Location N900–N907		Superficial Injury N910–N918		Contusion and Crushing With Intact Skin N920–N929		Effects of Foreign Body N930–N939		Burn N940–N949		Injury to Nerves and Spinal Cord N950–N959		Adverse Effect of Medicinal Agents N960–N979		Adverse Effect of Non-Medicinal Substances N980–N989		Other Adverse Effects N990–N999		Total	
			M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
E800–807	Railway Accidents	Patients	4	1	5		7						2	2			1				2				2												2		25	3
		Avge. Age	43	47	42		33						19	8			28				48				50												20		36	21
		Avge. Stay	20·3	1·0	9·8		31·9						6·5	1·0			1·0				41·5				1·0												1·0		18·2	1·0
E810–819	Motor Vehicle Traffic Accidents	Patients	479	241	216	89	422	185	63	16	67	74	977	484	122	44	312	154	56	13	74	28	103	40	124	45	136	70			10	3	14	4	1		3		378	249	3 557	1 739
		Avge. Age	30	34	26	37	29	35	31	35	31	35	25	24	27	29	26	27	27	33	23	33	26	25	23	24	29	31			29	20	29	23			26		27	26	27	29
		Avge. Stay	19·9	19·6	9·0	9·4	27·3	28·5	10·1	14·1	5·7	8·0	5·6	5·2	13·2	16·1	4·8	5·0	4·3	6·6	11·3	14·4	4·5	5·3	4·0	4·1	3·7	3·9			9·0	15·3	15·0	5·5	55·0		1·0		2·3	3·3	10·2	10·2
E820–823	Motor Vehicle Non-Traffic Accidents	Patients	8	1	12	3	25	1	2		2		22	4	7	1	5		1		5	2	2		6	2	3	1											13	4	113	19
		Avge. Age	28	5	24	12	24	71	15		26		22	14	19	67	25		47		18	30	29		19	21	27	6											26	27	24	24
		Avge. Stay	12·3	9·0	6·8	3·0	11·5	6·0	13·0		5·5		19·7	1·8	10·0	15·0	14·8		13·0		13·0	21·5	2·5		6·8	3·0	8·7	3·0											2·9	3·0	11·2	5·8
E825–827	Other Road Vehicle Accidents	Patients	18	19	58	42	33	20	7	3	2	2	96	69	4	2	15	10	1	5	11	4	2	2	5	9	6	8			1								19	10	278	205
		Avge. Age	26	17	13	11	16	15	27	13	13	19	15	13	15	11	13	12	10	12	9	5	13	16	10	16	24	22			8								14	15	13	13
		Avge. Stay	4·9	10·1	2·2	2·1	13·0	7·2	2·9	4·0	3·0	4·5	1·9	2·7	6·8	14·5	2·8	3·0	1·0	20·0	8·1	2·8	2·5	6·0	2·0	4·0	2·8	3·3			8·0								2·4	2·8	3·9	4·4
E830–838	Water Transport Accidents	Patients	5		5	1	11	2					13		2	1	3		6		4	1					2				3								6	1	60	6
		Avge. Age	35		47	13	39	69					40		47	30	36		38		35	30					33				34								35	21	38	39
		Avge. Stay	36·8		4·2	1·0	23·2	5·5					3·8		8·5	5·0	1·0		3·7		52·0	2·0					5·5				14·3								4·2	13·0	14·0	5·3
E840–845	Air and Space Transport Accidents	Patients	4		1		4	1				1															2	1											1		12	3
		Avge. Age	29		21		25	21				22															31	31											26		27	25
		Avge. Stay	17·0		4·0		14·3	6·0				3·0															8·0	1·0											2·0		12·3	3·3
E850–859	Accidental Poisoning by Drugs and Medicaments	Patients							1			1		1																				247	290							248	292
		Avge. Age							15			4		77																				13	18							13	18
		Avge. Stay							3·0			4·0		6·0																				2·6	3·7							2·5	3·2
E860–869	Accidental Poisoning by Other Solid and Liquid Substances	Patients																								1				1					388	228					388	230
		Avge. Age																								15				4					7	4					7	4
		Avge. Stay																								3·0				2·0					2·6	3·3					2·6	3·3
E870–877	Accidental Poisoning by Gases and Vapours	Patients	1											1																					30	14					31	15
		Avge. Age	48											18																					25	14					25	14
		Avge. Stay	21·0											1·0																					2·1	1·6					2·7	1·5
E880–887	Accidental Falls	Patients	713	289	1 295	1 147	911	869	110	53	67	29	395	202	32	9	71	51	18	4	17	10	4	1	11	7	70	59					5	2					104	102	3 823	2 834
		Avge. Age	32	45	20	36	37	60	29	50	28	37	20	23	32	32	30	35	37	32	23	49	54	13	33	58	38	60					40	55					26	41	28	44
		Avge. Stay	7·9	9·9	3·4	4·5	17·0	30·3	4·9	8·2	5·2	7·8	2·2	2·1	7·0	7·2	2·9	3·5	4·2	1·3	14·2	10·8	2·0	1·0	3·1	16·6	6·0	9·8					20·6	5·0					4·3	8·5	7·6	13·2
E890–899	Accidents Caused by Fires and Flames	Patients																																							1		510	254
		Avge. Age																																								24	24
		Avge. Stay																																								12·5	10·3
E900–909	Accidents Due to Natural and Environmental Factors	Patients	14	7	4	8	6	5	1		1		10	9	1	2	32	19	14	6	6	8	11	4	18	13	3	3			1								299	164	74	45	434	294
		Avge. Age	31	23	7	21	41	50	29		31		15	22	30	11	12	13	24	34	30	30	8	26	18	20	34	19			50								22	23	35	27	23	24
		Avge. Stay	4·0	9·3	1·3	3·0	23·2	26·2	1·0		4·0		1·9	1·8	4·0	7·5	5·5	2·1	4·1	6·8	4·8	12·0	2·7	2·3	5·5	4·1	1·3	7·3			1·0								1·6	1·7	4·8	4·5	2·9	3·4
E910	Accidental Drowning & Submersion	Patients	3	2					2		1			1	1																									30	19	37	22
		Avge. Age	19	16					45		51			11	33																									12	6	16	7
		Avge. Stay	8·3	13·0					19·5		3·0			1·0	10·0																									2·3	2·2	4·0	3·1
E911–912	Inhalation and Ingestion of Food and Other Objects	Patients									1					3																									66	43
		Avge. Age									60					46																									25	26
		Avge. Stay									23·0					3·3																									2·7	1·9
E914–915	Foreign Body Accidentally Entering Eye or Orifice	Patients											1		2	1	4	1	2						6	3													247	159
		Avge. Age											10		56	59	36	56	18						10	4													29	22
		Avge. Stay											3·0		10·5	3·0	5·3	15·0	2·0						3·3	3·7													2·6	2·6
E920	Accidents Caused by Cutting or Piercing Instruments	Patients	2	1	31	2	4		4		1	1	1	1	3		443	230	1 080	227	554	270	91	57	11	5	1	1			1						1	2	1	2 247	804
		Avge. Age	26	23	41	30	27		27		47	21	20	7	32		26	25	29	27	22	25	28	29	27	31	34	9			1						41	21	17	27	26
		Avge. Stay	7·0	1·0	4·5	1·5	11·5		2·8		4·0	3·0	1·0	1·0	15·0		3·3	2·9	3·5	3·6	5·4	6·1	4·3	5·7	5·2	2·4	9·0	1·0			3·0						1·0	1·0	10·0	4·0	4·4
E913 E916–919 E921–929	Other Accidents	Patients	173	27	157	38	138	26	422	141	471	189	926	430	90	12	153	53	267	74	75	14	6	3	115	67	524	176	1		402	135	33	15			1	1	879	340	4 833	1 739
		Avge. Age	28	23	25	25	27	33	29	38	34	38	19	17	27	30	24	22	25	21	25	25	25	29	27	32	27	36	21		19	16	38	35			28	3	33	38	27	29
		Avge. Stay	10·0	9·4	4·4	3·4	13·3	13·0	6·1	7·6	5·4	6·6	2·5	2·4	8·4	7·7	5·9	4·7	3·8	2·9	9·3	12·0	3·4	5·7	4·7	6·3	4·8	6·2	8·0		8·5	12·4	9·1	7·2			1·0	19·0	5·7	10·9	5·6	6·2
E930–936	Surgical and Medical Complications and Misadventures	Patients						2						1	1	10											2	1	1	1		1				98	142		1	439	446	541	605
		Avge. Age						73						19	28	24											36	64	55	26		5				50	56		55	35	35	38	40
		Avge. Stay						34·5						1·0	1·0	6·0											7·5	7·0	36·0	3·0		5·0				8·5	10·9		1·0	6·6	6·2	7·0	7·4
E940–949	Late Effects of Accidental Injury	Patients	74	37	60	29	90	44	19	7	8	15	40	12	4	6	31	10	30	5	10	5	3	2	5	1	2	1	2	1	32	32	31	9		1	2		253	176	696	393
		Avge. Age	30	22	25	33	37	50	34	33	40	34	31	31	49	29	21	20	24	32	26	26	54	28	49	66	34	0	24	37	14	10	38	37		75	26		43	45	35	37
		Avge. Stay	13·7	17·0	8·1	5·6	24·5	31·5	6·6	7·7	18·3	10·5	13·6	11·2	1·0	21·2	7·8	4·8	4·7	3·0	16·7	6·4	14·0	9·0	14·0	19·0	3·0	1·0	9·0	10·0	18·8	14·4	6·8	6·7		1·0	122·5		10·8	14·6	12·9	15·0
E950–959	Suicide and Self-Inflicted Injury	Patients	4	1	1		2	1					4	2	3	2	5		30	37			2	3	1		1				1		1	5	353	821	38	13	5	5	451	890
		Avge. Age	70	27	16		47	39					38	19	29	22	41		28	27			45	28	18		23				25		23	33	31	31	37	35	40	30	32	30
		Avge. Stay	55·3	115·0	1·0		15·0	29·0					2·3	2·5	23·7	68·5	6·2		4·8	4·6			5·0	2·3	6·0		1·0				33·0		3·0	9·2	5·8	5·2	8·7	4·7	48·8	2·2	7·0	5·5
E960–969	Homicide and Injury Purposely Inflicted by Other Persons	Patients	168	35	16	7	15	5	4	1	2		215	53	17	9	77	29	21	4	4	2	7	4	4	10	27	30			1		3			2			39	45	620	236
		Avge. Age	30	35	30	9·3	39	19·4	32	46	63		30	29	37	26	35	36	30	33	37	37	31	28	45	32	33	36			44		26			30			27	24	31	31
		Avge. Stay	4·7	9·7	2·6	7·7	19·4	1·3	1·0	4·5		2·4	2·8	12·6	6·2	4·5	3·9	3·7	1·8	6·8	5·5	4·4	1·0	3·3	4·7	4·2	3·4			1·0		1·7			2·0			4·3	5·1	4·0	5·2
E970–978	Legal Intervention	Patients															1																								1	
		Avge. Age															25																								25	
		Avge. Stay															6·0																								6·0	
E980–989	Injury Undetermined Whether Accidentally or Purposely Inflicted	Patients	5				3						1	1		1	4	7	1	1			3	1			1	1							88	258	11	2	2		119	272
		Avge. Age	27				23						42	41		18	32	34	31	20			38	34			18	31							36	29	38	18	22		35	29
		Avge. Stay	26·8				4·7						5·0	26·0		4·0	29·8	8·1	2·0	1·0			4·3	1·0			3·0	1·0							4·2	2·9	7·6	1·0	19·5		6·6	3·1
E990–999	Injury Resulting from Operations of War	Patients	1								1						1						1																4	
		Avge. Age	36								27						28						33																31	
		Avge. Stay	31·0								3·0						32·0						5·0																17·8	
TOTALS	All External Causes	Patients	1 676	661	1 861	1 366	1 671	11 61	635	221	624	312	2 704	1 273	289	103	1 158	564	1 528	376	763	344	236	117	308	163	779	352	302	197	959	426	106	41	787	1 514	772	425	2 246	1 443	19 404	11 059
		Avge. Age	31	37	22	35	33	54	30	40	33	37	23	21	28	29	26	26	28	26	23	28	28	27	25	28	28	38	21	25	22	20	34	37	29	30	16	13	33	35	27	32
		Avge. Stay	11·8	14·0	4·3	4·7	19·5	29·1	6·3	8·1	5·6	7·2	3·9	3·6	10·7	12·9	4·5	3·9	3·6	3·9	7·2	7·3	4·5	5·1	4·5	5·6	4·7	6·0	2·7	2·4	11·0	11·1	8·4	6·2	5·0	5·0	2·8	2·9	5·8	8·1	7·0	8·5

HOSPITAL DISCHARGES 1973

Perth Statistical Division

Hospital Name	Type	Number of Beds	Number of Discharges	Per Cent of Metropolitan Discharges
Royal Perth	1	867	27 083	18·15
Sir Charles Gairdner	1	483	10 190	6·83
Repatriation	4	419	5 978	4·01
St. John of God, Subiaco	2	388	13 204	8·85
Princess Margaret (Children)	1	315	13 872	9·30
Fremantle	1	273	11 881	7·96
King Edward Memorial (Women)	1	250	8 018	5·37
St. Anne's	2	232	7 249	4·86
St. John of God, Belmont	2	116	4 168	2·79
Swan Districts	3	113	6 088	4·08
Osborne Park	3	94	4 520	3·03
Mount	2	93	4 242	2·84
Stirling	2	80	4 994	3·35
Bicton Medi-Centre (Govt. as from 1/7/73)	2	75	144	0·10
Armadale-Kelmscott	3	71	4 144	2·78
Bentley	3	70	3 620	2·43
South Perth Community	2	67	3 573	2·39
Attadale	2	57	901	0·60
Bethesda	2	56	2 772	1·86
Kalamunda Spa. (opened 29/10/73)	2	48	171	0·11
Woodside	3	40	1 543	1·03
Oats Street	2	38	1 171	0·78
St. Joseph's	2	37	1 430	0·96
Devonleigh	3	35	2 073	1·39
Hawthorn	3	29	1 799	1·21
Avro	2	25	1 233	0·83
Westminster (closed 11/1/73)	2	24	16	0·01
Martindale	2	23	58	0·04
Lucknow	2	22	408	0·27
Morna	2	21	1 298	0·87
Harrow	2	18	163	0·11
Lesmurdie	2	17	390	0·26
Hillcrest	2	15	148	0·10
Niola	2	14	97	0·07
Kwinana	2	12	533	0·36
Wooroloo	3	8	43	0·03
Total	....	4 545	149 215	100·00

1—Teaching Hospital.
2—Private Hospital.
3—Government and Board Hospital.
4—Commonwealth Repatriation.

PERTH STATISTICAL DIVISION 1973

HOSPITALISED NON-METROPOLITAN PATIENTS BY STATISTICAL DIVISION OF RESIDENCE AND TYPE OF HOSPITAL

Statistical Division of Residence	Discharges				
	Number	Percent			
		Total	Teaching	Other Govt. and Board	Private
South West	3 965	16·8	9·6	2·3	4·8
Southern Agricultural	1 807	15·8	8·4	1·3	6·1
Central Agricultural	2 814	15·6	7·6	1·8	6·1
Northern Agricultural	2 832	20·6	9·8	3·1	7·8
Eastern Goldfields	2 070	13·6	7·5	1·7	4·4
Central	477	31·7	22·8	1·7	7·2
North West	557	16·0	10·3	1·4	4·3
Pilbara	1 034	12·4	6·8	1·2	4·4
Kimberley	392	6·6	4·7	0·3	1·6

DISCHARGES FROM W.A. HOSPITALS BY STATISTICAL DIVISION OF RESIDENCE

Statistical Division	Number*	Rate/1 000 Population
Perth	134 169	182
South West	23 661	299
Southern Agricultural	11 423	256
Central Agricultural	18 095	347
Northern Agricultural	13 716	315
Eastern Goldfields....	15 242	349
Central	1 503	346
North West	3 489	252†
Pilbara	8 315	
Kimberley	5 915	392
Metropolitan (Perth)	134 169	182
Rural (All Others)....	101 359	308
Total State*	235 528	220

* Does not include 2 106 discharges for which Geographical location was inaccurate or incomplete. Total discharges for State in 1973 were 237 634.

† Separate Population data for North West and Pilbara Divisions no longer available from Bureau of Statistics.

WESTERN AUSTRALIA 1973

Hospital Discharge Rates by

Statistical Division of Residence

rates per 1,000 population

TOTAL STATE: 220

43996—(14)

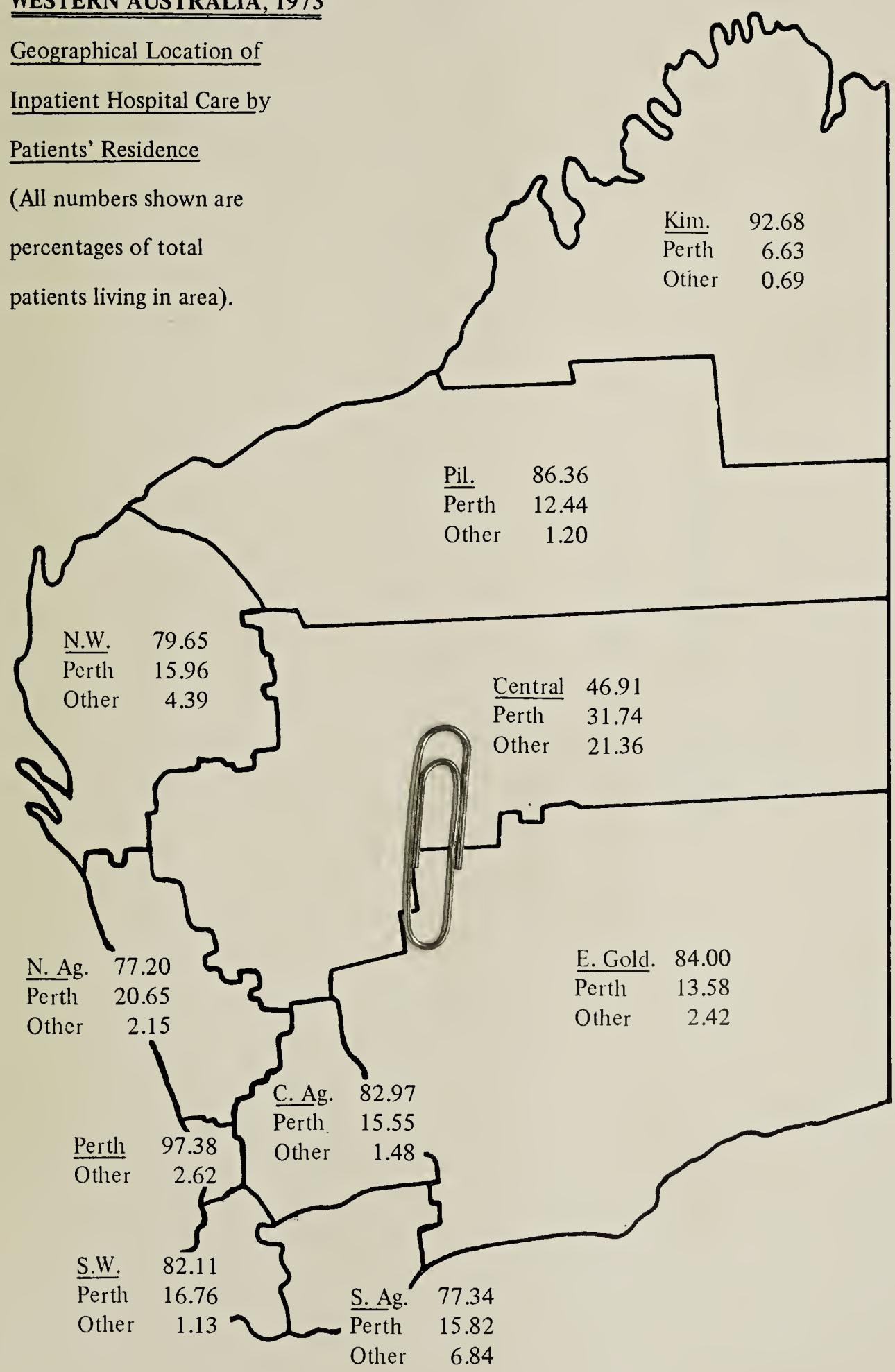
GEOGRAPHICAL LOCATION OF IN-PATIENT HOSPITAL CARE
BY PATIENTS RESIDENCE, W.A.—1973

Statistical Division of Residence	Statistical Division of Hospitalization		
	Home	Perth	Other
	%	%	%
Perth	97·38	....	2·62
South West	82·11	16·76	1·13
Southern Agricultural	77·34	15·82	6·84
Central Agricultural	82·97	15·55	1·48
Northern Agricultural	77·20	20·65	2·15
Eastern Goldfields	84·00	13·58	2·42
Central	46·91	31·74	21·36
North West	79·65	15·96	4·39
Pilbara	86·36	12·44	1·20
Kimberley	92·68	6·63	0·69

WESTERN AUSTRALIA, 1973

Geographical Location of Inpatient Hospital Care by Patients' Residence

(All numbers shown are percentages of total patients living in area).



Appendix XVIII

Derby Leprosarium

Admissions and Discharges for 1973

Month	Admissions							Discharges									Inmates Remaining in Leprosarium		
	Male			Female			Total Male and Female	Male				Female				Total Male and Female			
	Admitted	Re-Admitted	Total	Admitted	Re-Admitted	Total		Discharged	Deceased	Absconded	Total	Discharged	Deceased	Absconded	Total		Male	Female	Total Male and Female
January	....	....	....	....	....	....	....	....	....	....	....	1	....	....	1	1	55	32	87
February	....	....	....	....	....	....	....	1	....	....	1	1	....	....	1	2	54	31	85
March	....	1	1	1	4	5	6	1	....	....	1	1	....	....	1	2	54	35	89
April	....	....	....	....	....	....	....	4	....	....	4	2	1	....	3	7	50	32	82
May	....	1	1	....	....	....	1	3	....	....	3	1	....	....	1	4	48	31	79
June	1	1	2	....	....	....	2	1	....	....	1	....	....	....	....	1	49	31	80
July	....	1	1	....	1	1	2	....	....	....	....	....	....	....	....	....	50	32	82
August	1	....	1	....	....	....	1	....	....	....	....	1	....	....	1	1	51	31	82
September	....	1	1	....	1	1	2	1	....	....	1	1	....	....	1	2	51	31	82
October	....	1	1	1	....	1	2	3	....	....	3	1	1	....	2	5	49	30	79
November	....	1	1	....	....	....	1	1	....	....	1	1	....	....	1	2	49	29	78
December	....	1	1	....	....	....	1	2	....	....	2	....	....	....	....	2	48	29	77
Total	2	8	10	2	6	8	18	17	....	....	17	10	2	....	12	29	....	....	....

Appendix XIX

Incidence and Mortality of Notifiable Diseases

Diseases Notifiable	1970		1971		1972		1973	
	Cases Notified	Deaths	Cases Notified	Deaths	Cases Notified	Deaths	Cases Notified	Deaths
Amoebiasis	....	....	2	....	2	....	2	....
Ancylostomiasis	3	....	C.O.S. 1	....	2	....	....	....
Anthrax	....	....	....	....	....	....	....	....
Bacillary Dysentery	256	4	149	2	145	2	212	....
Bilharziasis	....	....	1	....	....	....	....	....
Brucellosis	2	....	1	....	....	....	1	....
Cholera	....	....	....	....	....	....	....	....
Diphtheria	2	....	1	....	2	....	5	1
Encephalitis Lethargic	....	....	....	....	....	1	....	....
Filariasis	1	....	C.O.S. 1	....	....	....	1	....
Homologous Serum Jaundice	....	N.A.	....	N.A.	....	N.A.	....	....
Hydatid	....	....	2	....	....	....	1	....
Infective Hepatitis	166	4	291	3	163	5	165	3
Leprosy	28	1	25	2	17	1	12	2
Leptospirosis	....	....	....	....	2	....	3	....
Malaria	10	....	C.O.S. 19	....	C.O.S. 14	....	C.O.S. 9	....
Meningococcal Infection	5	4	5	2	3	2	7	2
Ornithosis	....	....	....	....	....	....	....	....
Paratyphoid	....	....	1	....	....	....	1	....
Plague	....	....	....	....	....	....	....	....
Poliomyelitis	....	....	....	1	4	2	....	2
Puerperal Fever	2	....	2	1	....	....	1	....
Relapsing Fever	....	....	....	....	....	....	....	....
Salmonella Infection (A)	152	2	224	5	123	5	311	2
Scarlet Fever	27	....	18	....	22	....	10	....
Small pox	....	....	....	....	....	....	....	....
Tetanus	....	....	4	1	....	....	....	....
Tuberculosis	148	12	143	21	155	11	146*	13
Typhoid Fever	1	....	1	....	2	....	....	....
Typhus Fever	....	....	....	....	1	....	....	....
Yellow Fever	....	....	....	....	....	....	....	....

N.A. = Not available.

(A) Other salmonella infection.

C.O.S. = Contracted out of State.

* Includes three transfers from other States.

Appendix XX

Stillbirth and Infant Mortality Rates W.A. (a)

Year	Total Births Including Stillbirths	Stillbirth Rates	Under One Week	Mortality Rates Under One Month	One Month and Under One Year	Total Mortality Rates Under One Year	Total Mortality Rates Under One Year Including Stillbirths
1947	13,178	23·2	16·9	19·4	13·2	30·2	53·4
1948	13,197	20·5	16·9	18·7	8·4	25·0	45·5
1949	13,779	19·4	16·2	19·0	6·8	25·9	45·3
1950	14,468	16·6	16·2	18·0	8·6	26·7	43·3
1951	15,091	19·7	16·2	19·7	8·5	28·2	47·9
1952	15,697	18·1	15·5	17·7	6·9	24·5	42·6
1953	16,130	16·6	13·4	16·2	7·3	23·4	40·0
1954	16,198	16·7	14·2	15·8	6·4	22·2	38·9
1955	16,862	14·2	13·3	15·8	6·3	22·1	36·3
1956	17,142	13·2	13·0	15·7	6·7	22·4	35·6
1957	17,172	14·4	13·6	14·9	5·9	20·8	35·2
1958	16,956	13·3	12·8	14·2	7·1	21·2	34·5
1959	17,336	13·0	12·3	13·6	6·3	19·9	32·9
1960	17,152	13·2	13·9	15·7	5·7	21·3	34·5
1961	17,318	13·9	10·3	12·6	6·8	19·4	33·3
1962	17,267	11·8	12·6	14·3	7·7	22·0	33·8
1963	17,468	10·2	12·3	14·7	5·5	20·2	30·4
1964	16,855	10·1	11·8	12·9	6·6	19·5	29·5
1965	16,367	11·1	12·8	15·0	6·5	21·4	32·5
1966	17,368	10·0	12·4	14·4	5·4	19·7	29·8
1967	18,211	10·3	11·4	13·0	4·3	17·2	27·6
1968	19,784	12·3	13·3	14·7	5·5	20·1	32·3
1969	21,004	11·9	13·9	15·3	6·2	21·6	33·5
1970	21,913	13·5	12·4	14·4	6·6	20·9	34·4
1971	24,537	12·1	11·0	12·4	6·5	18·9	31·1
1972	22,435	11·5	9·2	10·3	5·2	15·5	27·0
1973	20,780	13·0	10·9	12·7	6·3	19·0	32·0

(a) For 1965 and earlier years, exclude Full-blood Aborigines. From 1966, Aborigines are included. In above table, all rates are calculated in deaths per 1,000 total births, including stillbirths.

For 1968 and later years, the term " stillbirth " refers to a child of at least 20 weeks gestation, or birth weight of at least 400 grams not born alive. Prior to 1968, " stillbirth " referred to a child of at least 28 weeks gestation, not born alive

STILLBIRTH AND INFANT MORTALITY RATES (a) (b)

Area of Registration	Total Births Including Stillbirths (c)	Stillbirth Rates (c)	Infant Mortality Rates				Total Mortality Infant Deaths and Stillbirths
			Under One Week	Under One Month	One Month and Under One Year	Total Under One Year	
1972—							
New Zealand	63 858	10·1	8·7	10·0	5·5	15·5	25·5
1973—							
Western Australia	20 780	13·0	10·9	12·7	6·3	19·0	32·0
New South Wales	88 385	11·8	11·3	12·5	4·4	16·9	28·6
Victoria	67 925	11·8	9·1	10·1	4·0	14·1	25·9
Queensland	38 454	10·1	11·4	12·8	4·6	17·3	27·4
Tasmania	(d) 7 326	N.A.	(e) 10·2	(e) 11·5	(e) 7·2	(e) 18·7	N.A.
South Australia	20 594	9·1	7·8	8·7	4·7	13·4	22·5

N.A. = Not available.

(a) Rates calculated per 1,000 total births including stillbirths.

(b) Infant mortality defined as deaths occurring from birth to one year of age.

(c) The term " stillbirth " refers to a child, not born alive, of at least 20 weeks gestation (for W.A., N.S.W. and S.A.) or 28 weeks gestation (for New Zealand, Victoria, Queensland and Tasmania).

(d) Live births only.

(e) Based on Live Births only.

INFANT MORTALITY (*a*)

Year	Births	Infant Mortality Per 1,000 Live Births
1947	12,874	30·9
1948	12,931	25·6
1949	13,511	26·4
1950	14,228	27·1
1951	14,794	28·7
1952	15,413	24·9
1953	15,862	23·8
1954	15,928	22·5
1955	16,623	22·4
1956	16,916	22·7
1957	16,924	21·1
1958	16,731	21·5
1959	17,111	20·2
1960	16,926	21·6
1961	17,078	19·7
1962	17,064	22·3
1963	17,290	20·4
1964	16,685	19·7
1965	16,186	21·7
1966	17,194	19·9
1967	18,023	17·4
1968	19,541	20·4
1969	20,754	21·8
1970	21,618	21·2
1971	24,239	19·1
1972	22,177	15·7
1973	20 510	19·2

(*a*) For 1965 and earlier years, excludes full-blood Aborigines. From 1966 Aborigines are included.

Infant mortality defined as deaths occurring from birth to one year of age.

COMPARISON OF INFANT MORTALITY AND GENERAL DEATH RATE

Place	Infant Mortality Rate (*a*)					General Death Rate				
	1969	1970	1971	1972	1973	1969	1970	1971	1972	1973
New Zealand (*b*)	16·9	16·7	16·5	15·6	N.A.	8·69	8·81	8·49	8·50	N.A.
Western Australia	21·8	21·2	19·1	15·7	19·2	7·69	7·59	7·57	7·04	7·31
New South Wales	18·9	19·7	17·4	17·5	17·1	9·15	9·62	9·04	8·91	8·72
Victoria	15·0	14·5	14·7	14·4	14·3	8·55	8·79	8·72	8·40	8·53
Queensland	18·9	17·9	19·2	17·8	17·5	8·95	9·50	8·93	8·86	8·82
South Australia	15·8	16·2	15·9	16·8	18·7	8·19	8·75	8·23	8·21	8·18
Tasmania	16·5	14·2	13·7	16·2	13·5	8·59	8·18	8·42	8·21	8·43

N.A. Denotes not available.

(*a*) Infant deaths per thousand live births. (Deaths under one year of age.)

(*b*) Includes Maoris.

Appendix XXI

Western Australia Stillbirth and Birth Rates (*a*)

Year	Mean Population Year Ended 31st December	Live Births		Stillbirths (*b*)	
		Number	Rate per 1,000 Mean Population	Number	Rate per 1,000 Total Births
1951	580,317	14,794	25·49	297	19·68
1952	600,615	15,413	25·66	284	18·09
1953	621,034	15,862	25·54	268	16·62
1954	639,963	15,928	24·89	270	16·67
1955	657,323	16,623	25·29	239	15·17
1956	674,459	16,916	25·08	226	13·18
1957	687,448	16,924	24·62	248	14·44
1958	699,915	16,731	23·90	225	13·27
1959	711,737	17,111	24·04	225	12·98
1960	722,900	16,926	23·41	226	13·18
1961	737,596	17,078	23·15	240	13·86
1962	766,205	17,064	22·58	203	11·76
1963	788,457	17,290	22·23	178	10·19
1964	808,300	16,685	20·93	170	10·09
1965	826,481	16,186	19·85	181	11·06
1966	849,112	17,194	20·25	174	10·02
1967	879,815	18,023	20·48	188	10·32
1968	915,757	19,541	21·34	243	12·28
1969	955,660	20,754	21·72	250	11·90
1970	994,201	21,618	21·74	295	13·46
1971	1,031,614	24,239	23·50	298	12·15
1972	1,056,508	22,177	20·99	258	11·50
1973	1 072 680	20 510	19·12	270	12·99

(*a*) Mean population : Figures prior to 1962 exclude full-blood Aborigines.
Births : For 1965 and earlier years figures exclude full-blood Aborigines ; from 1966 Aborigines are included.
A line drawn across the columns indicates a break in the series.
Birth rates from 1966 have been revised in accordance with the final results of the 1971 Census.

(*b*) From 1st January, 1968, the term " stillbirth " for registration purposes, refers to a child of at least 20 weeks gestation, not born alive. Previously it was restricted to cases where the gestation period was at least 28 weeks.

Appendix XXII

MATERNAL MORTALITY

Period	Average Annual Live Births	Average Annual Maternal Deaths	Average Annual Rate
1901–1905	6,681	28·0	4·19
1906–1910	7,691	43·4	5·64
1911–1915	8,844	39·4	4·46
1916–1920	7,726	41·4	5·36
1921–1925	8,056	34·2	4·25
1926–1930	8,748	46·8	5·35
1931–1935	8,062	35·4	4·39
1936–1940	8,877	32·4	3·65
1941–1945	10,408	24·4	2·34
1946–1950	13,130	21·4	1·63
1951–1955	15,724	13·8	0·88
1956–1960	16,922	8·2	0·48
1961–1965	16,861	5·0	0·30
1966–1970	19,426	4·0	0·21

Year	Live Births	Deaths from									
		Puerperal Septicaemia		Other Puerperal Infection		Abortion		All Other Complications of Pregnancy and of the Puerperal State		All Complications of Pregnancy and the Puerperal State	
		No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
1947	12,874	1	0·08	1	0·08	8	0·62	22	1·71	32	2·49
1948	12,981	2	0·15	4	0·31	1	0·08	13	1·00	20	1·55
1949	13,511	....	....	2	0·15	3	0·22	11	0·81	16	1·18
1950	14,288	....	....	2	0·14	1	0·07	10	0·70	13	0·91
1951	14,794	....	....	2	0·14	3	0·20	11	0·74	16	1·08
1952	15,413	....	....	3	0·19	3	0·19	12	0·78	18	1·17
1953	15,862	....	....	....	....	1	0·06	8	0·50	9	0·57
1954	15,928	....	....	....	....	5	0·31	7	0·44	12	0·75
1955	16,623	....	....	....	....	1	0·06	13	0·78	14	0·84
1956	16,916	....	....	....	....	2	0·12	7	0·41	9	0·53
1957	16,924	....	....	....	....	3	0·18	8	0·47	11	0·65
1958	16,731	....	....	....	....	1	0·06	7	0·42	8	0·48
1959	17,111	....	....	....	....	1	0·06	4	0·23	5	0·29
1960	16,926	1	0·06	....	....	3	0·18	4	0·24	8	0·47
1961	17,078	....	....	....	....	2	0·12	5	0·29	7	0·41
1962	17,064	....	....	....	....	1	0·06	4	0·23	5	0·29
1963	17,290	....	....	....	....	1	0·06	3	0·17	4	0·23
1964	16,685	....	....	....	....	3	0·18	3	0·18	6	0·36
1965	16,186	....	....	....	....	1	0·06	2	0·12	3	0·19
1966	17,194	....	....	....	....	1	0·06	6	0·35	7	0·41
1967	18,023	....	....	....	....	....	....	2	0·11	2	0·11
1968	19,541	....	....	....	....	....	....	5	0·26	5	0·26
1969	20,754	....	....	....	....	....	....	3	0·14	3	0·14
1970	21,618	....	....	....	....	....	....	3	0·14	3	0·14
1971	24,239	1	0·04	....	....	....	....	2	0·08	3	0·12
1972	22 177	....	....	....		1	0·05	2	0·09	3	0·15
1973	20 510	....	....	....	....	....	....	5	0·24	5	0·24

(All rates per thousand live births.)

MATERNAL MORTALITY RATES PER THOUSAND LIVE BIRTHS

Place	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
Western Australia (*a*)	0·36	0·19	0·41	0·11	0·26	0·14	0·14	0·12	0·14	0·24
New Zealand (*b*)	0·26	0·17	0·32	0·17	0·24	0·20	0·22	0·22	0·14	N.A.
New South Wales (*a*)	0·34	0·32	0·28	0·24	0·34	0·17	0·25	0·15	0·10	0·08
Victoria (*a*)	0·31	0·36	0·25	0·20	0·20	0·14	0·25	0·23	0·08	0·04
Queensland (*a*)	0·29	0·30	0·40	0·26	0·31	0·22	0·21	0·25	0·15	0·29
Tasmania (*a*)	0·24	0·40	0·27	0·27	0·48	0·12	0·37	Nil	0·13	Nil
South Australia (*a*)	0·33	0·34	0·20	0·20	0·14	0·32	0·31	0·22	0·18	0·10

(*a*) For 1965 and earlier years exclude Full-blood Aborigines. In 1966, and subsequent years, Aborigines are included.
(*b*) Non-Maori.
N.A. = Not available.

Appendix XXIII

Expenditure and Revenue for the Calendar Year 1973

Expenditure for Year Ended 31/12/73

			$
Salaries (including Administration and Other Health Services)			1 359 063
Administration Expenses			156 023
Printing and Stationery			41 807
Government Employees Housing Rent			47 743
Child Health Services—		$	
Salaries		979 566	
Generally		95 727	
			1 075 293
Dental Health Services—			
Salaries		465 141	
Generally		180 751	
Dental Bursaries		55 989	
Mobile Clinics		16 756	
North West Clinics		83 821	
Other Clinics		48 757	
			851 215
Epidemiology—			
Salaries		119 823	
Generally		31 192	
			151 015
Community Health—			
Salaries		475 239	
Generally		332 571	
			807 810
Laboratories—			
Salaries		1 670 983	
Lab. Cadets		25 979	
Generally		686 787	
			2 383 749
Other Health Services—			
Pharmaceutical Services		12 218	
Medical Illustrations and Photography		18 290	
Health Services Centre		40 862	
Health Surveyors and Inspectors		40 856	
Pest Control		6 812	
Library and Technical Information Service		22 347	
Occupational Health		10 409	
Clean Air Act		33 716	
Radioactive Substances		444	
Statistics		14 977	
V.D. Control		31 728	
Poliomyelitis		21 702	
Poison Information Centre		11 745	
Fly Eradication		....	
Infectious Diseases		4 594	
Thalidomide Babies		....	
Chiropody Services		3 697	
Social Workers Subsidies		....	
Guthrie Testing—P.M.H.		4 893	
Paraplegie—R.P.H. Recoup		1 010	
Abatement of Noise		313	
Geriatrics		6 928	
Food and Nutrition		533	
Paramedical Service-Aged Persons Homes		....	
Miners X-rays		44 176	
			332 250
T.B. Control			
Salaries		307 847	
Generally		201 069	
Recoup—Sir Charles Gairdner		383 884	
			892 800
GRAND TOTAL			$8 098 768

Revenue for Year Ended 31/12/73

	$	$
Licenses—		
Anatomy	276	
Maternity Home	976	
Poisons Act	9 145	
Radioactive Substances Act	650	
Optical Dispensers	55	
Private Hospitals	3 191	
Clean Air Act	11 005	
		25 298
Fees—		
Fish Inspection	11 956	
Meat Inspection	176 757	
Building Inspection	6 576	
Health Inspection Scheme—Goldfields	106	
Perth Medical Officers	2 072	
Pest Control Collections	2 136	
Pesticides Registration	3 792	
Photographic Charges	467	
Septic tank plans	58 926	
		262 788
Miscellaneous—		
Other	9 245	
Staff Rents	2 424	
Sales of Biscuits	975	
Miners X-ray Recoups	3 441	
Commonwealth Grant	994 750	
		1 010 835
Laboratories—		
Fees and Services		800 900
Dental—		
Fees		230 341
Tuberculosis Control—		
Maintenance Recoup from Commonwealth	902 996	
Capital Recoup from Commonwealth	20 182	
Health Vote-Base year transfer	155 702	
Administration	49 102	
		1 127 982
GRAND TOTAL		$3 458 144

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